

PRODUCTION

JUNE 1952

FLOW

BASIC MONTHLY

FLOW

MATERIALS HANDLING AND PACKAGING METHODS

PUBLIC LIBRARY
JUN 9 1952
DETROIT

Problem 7

Problem 6

Receiving And Storage Of Bulk Material

How To Handle Bulk Material In The Plant

Problem 5

How To Handle Bulk Material In The Yard

Problem 4

How Coal Is Handled By Metalworking Plants

Problem 3

How To Handle Foodstuffs Without Contamination

Problem 2

Overcoming Common Problems Of Bulk Handling

Problem 1

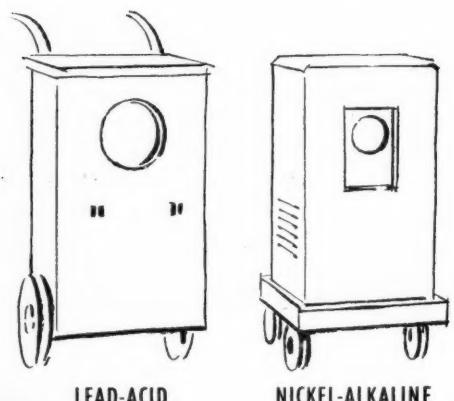
How to Ship Bulk Material

**SPECIAL ISSUE
HANDLING
BULK MATERIAL**

For Complete
Table of Contents
See Page 3

FLOW BASIC
FLOW QUARTERLY

130,000 Plant Coverage



"Can you afford two chargers

when

One RECTOX® does BOTH jobs!"

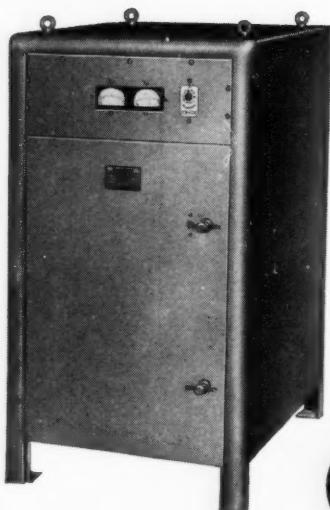
Now, with a Rectox charger, you can charge either lead-acid or nickel-alkaline-type batteries. No taps to change . . . just flick a switch! Really a saving in time and costly extra equipment.

Rectox gives you a wide range of ampere hours and cell ratings in which to operate. Other features of these dual-purpose chargers are:

- ★ No energy-wasting resistor . . . no moving parts.
- ★ Units have heavy industrial construction . . . can be moved easily to where greatest need exists.
- ★ Dial control makes selection of charging rate and setting for number of cells a simple matter.

MORE DATA? Ask your Westinghouse representative for a copy of DB-19-040, or write direct to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-21681



Circle No. 1 on Reader Service Card for more information

Waste Hours...or Work Hours in Your Plant?



Why Overwork Three Men This Way

Old-fashioned back-breaking hand-handling means thousands of misspent man hours, wasted man-power, slowed down production and shipping bottlenecks.

When One Man Does It Easier This Way

Press-button magic moves tons and tons with finger-tip control. Saves hours and dollars in handling costs every working day!

**CUT MATERIALS HANDLING COSTS
50% OR MORE!**

YEAR after year, more and more companies have come to learn that Automatic "101" TRANSPORTERS cut their materials handling costs as much as 50% or more, while adding valuable man-power in man-hours saved.

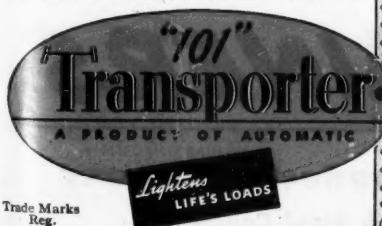
"101" TRANSPORTERS are sturdy, too. To prove how ruggedly these electric trucks stand up—to our knowledge every TRANSPORTER manufactured is still in service . . . and tens of thousands have been built. That's why there are more Automatic TRANSPORTERS in use today than any other operator-led electric truck.

FREE PROOF in Your Own Plant

to prove you can add man-hours without increasing workload of personnel!

But don't take our word for it! Put a "101" Transporter to the test . . . put it over the severest hauling hurdles in your own plant, absolutely free and without obligation! Mail coupon and we'll arrange for your 3 days' trial. First come, first served. No obligation to buy . . . no strings attached.

LARGEST EXCLUSIVE BUILDER OF
ELECTRIC INDUSTRIAL TRUCKS



FREE TRIAL COUPON

Automatic® 141 West 87th Street, Dept. H-2
Chicago 20, Illinois

Yes, I want to put the "101" Transporter to work for me for 3 days, free of all cost and obligation. Have your representative schedule it for me.

Company Name.....

By..... Title.....

Street Address.....

City..... Zone..... State.....

Trade Marks
Reg.

Circle No. 2 on Reader Service Card for more information

this poor man ran a B.C.* mill

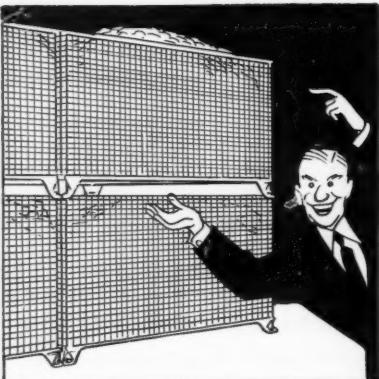


*BC means before Cargotainers . . . this poor chap never heard of them. His storage was haphazard; his shipping was slow; his inventories were seldom made with any accuracy.

To make matters worse, the floor space of his mill was so cluttered up with finished and semi-finished merchandise that operating efficiency and safety were at low ebb.

Needless to say, operating costs were higher than at any time since the founder grew a beard, and they were still going up. Just in time a Cargotainer salesman came to call.

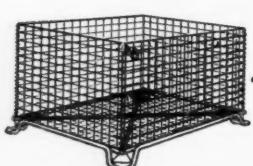
then he saw the light and went A.C.*



*AC—"after Cargotainers"—things were very much different. Even the heaviest of his products were visibly stored, tier on tier, in sturdy open-mesh Cargotainers. He never knew he had so much floor area.

Inventory check was now easy, and all materials and parts remained right in their rugged collapsible Cargotainers as they moved to assembly line and shipment. Safety records went up and costs down.

Moral: If by chance you are BC, you can save by going AC. Without obligation, our Materials Handling Engineers will show you how. Write today. Dept. F, Pittsburgh Steel Products Co., Grant Bldg., Pittsburgh 30, Pa.



CARGOTAINERS

by Pittsburgh Steel Products Company

A Subsidiary of Pittsburgh Steel Company

Circle No. 3 on Reader Service Card for more information

FLOW is not the official publication of any group, society or other special interest; its editorial pages are unbiased and undominated.

President and Publisher
IRVING B. HEXTOR

Executive Vice President
LESTER P. AURBACH

Vice President
EDWIN M. JOSEPH

Business Manager
WILLIAM S. WHEELER

Editor
HENRY F. EATON

Associate Editor
STANLEY S. GREENE

Associate Editor
JOHN D. VELARDO

Art Director
JOHN DIX

Production Manager
WM. L. JERSE

FLOW EDITORIAL AND BUSINESS OFFICES

All communications should be addressed to FLOW Magazine, 1240 Ontario Street, Cleveland 13, Ohio.

Cleveland Office
DAVID E. SAWYER
1240 Ontario Street
Cleveland 13, Ohio
Phone Superior 1-9622

New York Office
LEE HAAS, MGR.
TE. DRISCOLL
Room 803
60 E. 42nd St.
New York 17, New York
Murray Hill 7-3420

Chicago Office
FRED P. MIGNIN, JR., MGR.
LLOYD WILLOUGHBY
Room 734
520 N. Michigan Ave.
Chicago 11, Illinois
W. Hitehall 3-1655

Los Angeles Office
FRED FRISENFELDT
Industrial Publishing Co.
Room 607
1250 Wilshire Blvd.
Los Angeles 17, Calif.
Tucker 5703

London Office
JOHN A. LANKESTER
5 New Bridge Street
London, E.C. 4, England
City 4815

Distributor Representative
HAROLD F. BEHM

FLOW Magazine is affiliated with the Industrial Publishing Company which also publishes:

FLOW QUARTERLY
PRECISION METAL MOLDING
APPLIED HYDRAULICS
INDUSTRY AND WELDING
OCCUPATIONAL HAZARDS
COMMERCIAL REFRIGERATION
AND AIR CONDITIONING

FEATURES

Sixteen Ways To Unload and Store Bulk Materials	60
24 Ways To Handle Bulk Materials In The Plant	64
16 Ways To Handle Bulk Materials In The Yard	70
Portable Bins Keep Products Clean	74
Handling Coal	76
Bulk Handling Problem File	78
Clinic On Bulk Handling	82

PACKAGING & SHIPPING SECTION

What's New In Packaging and Shipping Equipment	111
Six Methods Of Packaging Bulk Material	112
Protective Containers For Dry Bulk Material	113
14 Ways To Ship Your Bulk Materials	116
Carloading Patterns For Shipping In Bags and Drums	122

DEPARTMENTS

Letters To The Editor	8
Association and Society News	12
News Views and Trends	16
Men In The News	20
News From The Sales Field	32
Highlights Of The Month's News	35
New Products	38
Literature Available From Advertisers In This Issue	40
Useful Literature	98
Opportunities	158
Advertisers Index	159

FLOW is indexed regularly by Engineering Index, Inc.

SUBSCRIPTION RATES



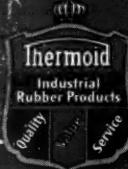
United States and possessions—\$3.00 per year, \$5.00 for 2 years.
Subscriptions in the United Kingdom—\$11.10 per annum, payable in advance.
Canada—\$4.00 per year, \$6.00 for 2 years.
Foreign—\$5.00 per year.
Single copy price—30 cents.
Sterling to our London Office.

Published Monthly

"Acceptance under section 34.84 P. L. and R. authorized at Saint Joseph, Mich."
Copyright 1952 by The FLOW Publishing Company

for handling
practically any
materials...
from aggregates
to asparagus...

Thermoid has
the right
conveyor belt
for your job



From years of experience in materials handling problems, Thermoid has developed a full line of superior Conveyor Belting. Only the finest materials are used, scientifically compounded to withstand wear and carry the load dependably. This extra margin of endurance means fewer delays due to belt breakage or premature wear.

Whether you are handling boxes, bags, cartons . . . stone, sand, gravel or other aggregates—consult your Thermoid distributor. He can recommend the right type of Thermoid Belt to do the job at the lowest cost per ton of material moved. Write today for your copy of the Thermoid Conveyor Belting Catalog No. 3679.

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

thermoid

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J.; Nephi, Utah

Circle No. 4 on Reader Service Card for more information



Truck synchronizes flow of materials to match production. Here tire treads are carried from treading machine as soon as finished. No delay—no clutter.



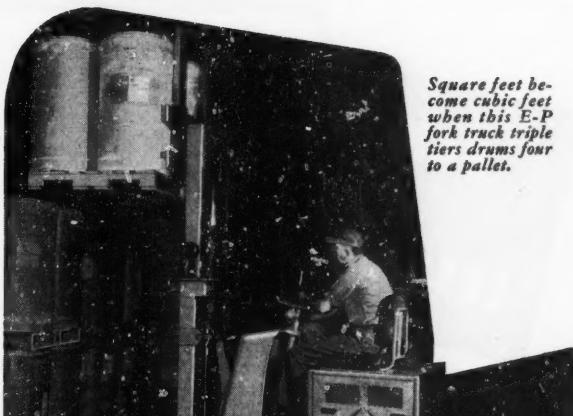
"King size" load of tires transported by E-P low lift truck on special skid.



Goodyear finds Elwell-Parkers valuable in their maintenance dept., too. Here a heavy truck tire mold is moved in the machine shop.



High stacking huge tires—Elwell-Parker ease of control pays off on a job like this.



Square feet become cubic feet when this E-P fork truck triple tiers drums four to a pallet.

ELWELL-PARKER Trucks

do all these jobs
for one user

The versatility of Elwell-Parkers is well illustrated by these typical applications at the Akron plant of Goodyear Tire & Rubber Co. All over this huge factory Elwell-Parkers are constantly on the go in production, storage, distribution and maintenance . . . Without obligation an experienced man will gladly survey your plant—to uncover new cost-cutting applications for industrial trucks. The Elwell-Parker Electric Co., 4236 St. Clair Avenue, Cleveland 3, Ohio.

NEW General Catalog
describes all E-P trucks in detail. Write for your copy **NOW.**



ELWELL-PARKER
POWER INDUSTRIAL TRUCKS
Established 1893

BAKER TRUCKS
require
LESS MAINTENANCE

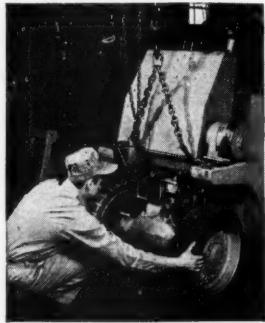
to you this means

- **LESS TIME OUT OF SERVICE**
- **TOP OPERATING EFFICIENCY**
- **LOWER OVERALL COST**

Baker Trucks are engineered and constructed to give maximum trouble-free service, and designed with many features for easier preventive maintenance and quicker, less costly repairs, when necessary. For example:

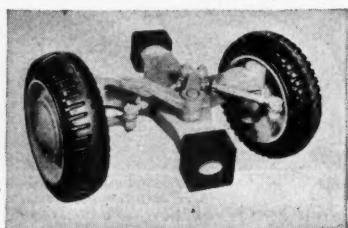
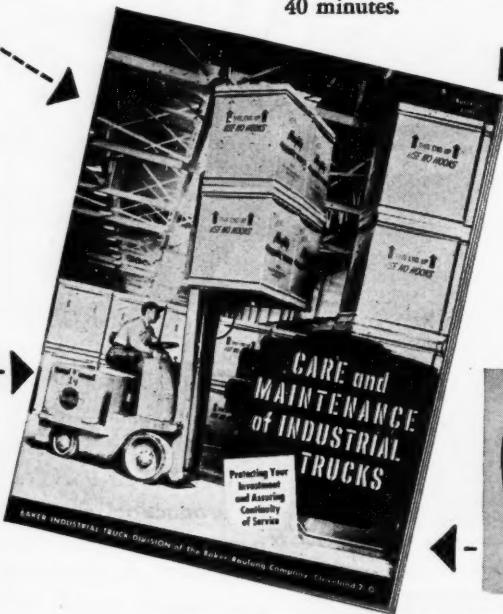


Electric dynamic braking saves wear on brake linings and protects drive axle and other moving truck parts by smoother, safer deceleration. Service brakes can be adjusted in 5 minutes, and relined in 30 minutes.



Baker exclusive Worm Drive Power Axle has fewer moving parts, is less subject to wear and does not lose efficiency with heavy loads or after long use. Mast assembly can be removed in 20 minutes and power axle pulled in 40 minutes.

Baker Rubber-mounted Trailing Axle is the simplest in use on industrial trucks. Can be removed from truck in less than 20 minutes by disconnecting steering tie rod and removing 8 bolts. Proper steering geometry prevents "scrubbing" of tires and means longer tire life.



Use of jumbo rubber blocks to absorb twisting axle action and road shocks eliminates need for spring connections. Blocks require no attention. Steering connections are above axle where they are protected from damage. Wheel bearings easily examined.

The above are 4 of the 60 illustrations from the new 16-page picture-story manual "Care and Maintenance of Industrial Trucks."

Write for your copy today.

Baker
INDUSTRIAL TRUCKS

The Baker-Raulang Company
1219 West 80th Street • Cleveland 2, Ohio

Please send me Bulletin 2100—"CARE and MAINTENANCE of INDUSTRIAL TRUCKS."

I am also interested in _____ pound capacity fork trucks.

Name _____ Title _____

Company _____

Address _____

City _____ State _____



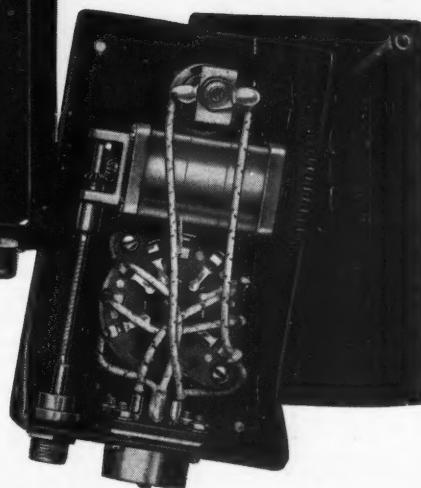
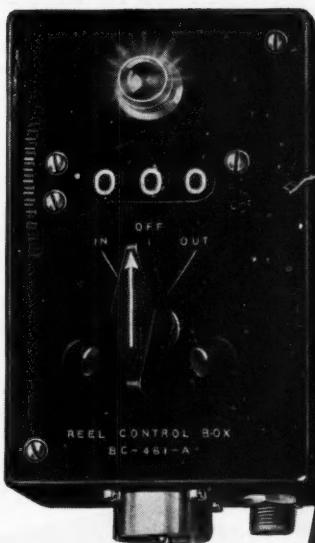
Added Evidence
that—

Small Component...
or Complete Unit...
You* can count on
getting whatever
You* need—

Everyone Can Count on **VEEDER-ROOT**

This REEL CONTROL BOX, complete with its *built-in* counting mechanism, indicates the number of feet of antenna reeled in and out of certain types of military aircraft. Manufactured completely by Veeder-Root, including outside bakelite cover and box, this unit shows another imaginative application of the universal language of direct-reading Control.

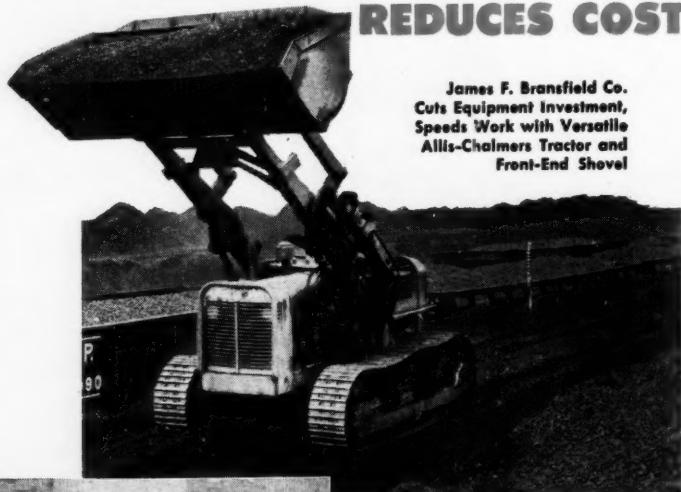
Now if you, *in any of your defense work*,* have a counting problem, then you can count on Veeder-Root to help you in every possible way.



VEEDER-ROOT INCORPORATED
"The Name That Counts"
HARTFORD 2, CONN. • GREENVILLE, S.C.
Montreal 2, Canada • Dundee, Scotland
Offices and agents in principal cities

"Counts Everything on Earth"

here's how NEW COAL HANDLING SYSTEM REDUCES COST



James F. Bransfield Co.
Cuts Equipment Investment,
Speeds Work with Versatile
Allis-Chalmers Tractor and
Front-End Shovel



ON COAL

STOCKPILES — HD-5G Tractor with Tracto-Shovel pushes coal wherever desired on stockpile — is more flexible than conveyor or bridge systems, lower cost, too.

COMPACTS — With added weight of fully loaded bucket, HD-5G compacts coal for safety from fire.

RECLAIMS — With 2-yd. bucket and 9-ft. dumping height, the HD-5G efficiently loads coal from stockpile to trucks for hauling to power plant. On short hauls it 'dozes or carries coal.



ON CINDERS

STOCKPILES cinders from power plant, placing piles wherever there is available space, without need for conveyors, tracks, etc.

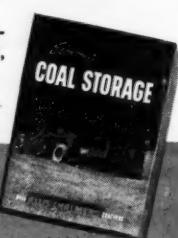
LOADS THEM FAST — Owner supplies cinders to concrete contractors, finds handling them with the HD-5G faster and lower cost than the power shovel formerly used for this purpose.

Tracto-Shovels are available for all four sizes of A-C tractors. Standard buckets 1 to 4 yd., coal-handling buckets 2 to 7 yd. (1-1/3 to 5 ton).

A-C tractors also provide additional return on your investment through use in plant or yard maintenance, car spotting, snow removal, dozens of other jobs.

Send for free booklet, "Economic Coal Storage with Allis-Chalmers Tractors." Write Allis-Chalmers Tractor Div., Dept. FL.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.



Circle No. 8 on Reader Service Card for more information

LETTERS to the editors

To FLOW:

In the February, 1952 issue of FLOW, there appeared an article entitled "Conveyors: Part II." This piece would be of considerable interest to a number of people in our various plants, and it would be very much appreciated if you could arrange to furnish us with ten tear sheets or other copies of this article so that we could distribute them.

E. W. Barnes
United States Rubber Co.

Tear sheets have been forwarded to Reader Barnes as requested. Copies are still available for other readers desiring them.

To FLOW:

Are you able to direct us to a source for obtaining a switching device, whereby a flow of uniform size and weight cases of goods on a gravity conveyor, may be automatically switched, five cases at a time, to one of two parallel lines, and the following five cases, then be switched automatically to the other parallel line, and so on continuously?

Lewis S. Elmer
Elmer & Co.

As in so many cases in the past, we turned to our copy of the FLOW DIRECTORY to get the answer for this question. We found what we wanted easily and quickly, and passed the information on to Reader Elmer. An investment of only \$6.50 by any of our readers will enable them too to be able to find the answers to any material handling problem which might come up.

More Service
at Less Cost

with

XTRA CUSHIONS-

THANKS TO

1. Longer wearing rubber compounds
2. Far greater cushioning
3. Smoother riding
4. Easier steering
5. Reduced materials breakage

ANOTHER important reason for the greater efficiency and economy of Xtra Cushion is the *exclusive* Goodyear process that bonds the tread to specially designed steel "saw tooth" base bands. This process substantially increases the amount of contact between rubber and base band



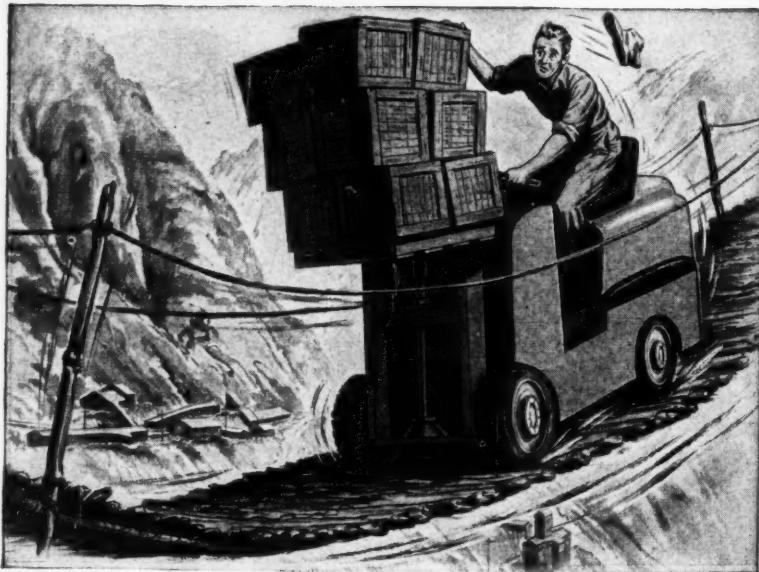
—materially reducing separation that is a common fault with ordinary industrial tires. It's an exclusive feature that makes Goodyears your best buy for long life and low over-all cost.

FREE TECHNICAL ENGINEERING ADVICE AND SERVICE

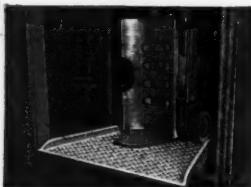
To help solve your particular industrial tire problems, Goodyear maintains a staff of fully qualified technical experts. For their free recommendations, write: Industrial Tire Division, Goodyear, Akron 16, Ohio.

GOOD  YEAR
INDUSTRIAL TIRES

Xtra Cushion—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio



YOU COULD GET IT ACROSS THIS WAY, but—



FLARED DOCK BOARD—For easy access in a limited turning area.



MAGLINER lightness—Easily handled by one man.



BOARD-and-RAMP TYPE—For low docks and low under-clearance equipment. Positive-acting, automatic drop lock.

... we certainly don't advise it! It's slow, dangerous—and expensive! Ridiculous as it may seem, it does serve to point out how out-moded bridge-and-ramp equipment can keep your loading operations moving at snail's pace. Today, shipping and receiving departments interested in low cost, high output loading, are equipping their docks with Magliner magnesium dock boards. Custom engineered for fast, easy transit between plant and freight carrier, Magliner dock boards eliminate loading bottlenecks . . . speed up incoming and outgoing shipments!

Magliner's magnesium lightness permits easy dock board handling by one man. Bridge design construction provides strength-to-spare for the heaviest of loads and equipment. Magliner dock boards are available custom engineered to your exact loading requirements, and in a wide range of standard models. Save time and money for YOUR business! Send today for complete information.



WRITE FOR
DESCRIPTIVE
BULLETIN DB-204

MAGLINE INC. • P.O. BOX 346 • PINCONNING, MICHIGAN

Circle No. 10 on Reader Service Card for more information

10

To FLOW:

Would you please advise where we could obtain engineering data on pneumatic conveyors. We wish to convey grain weighing between 40 and 50 lb. per cu. ft., also by products weighing 10 lb. and 30 lb. per cu. ft.

We have recently seen an advertisement showing the use of paper in place of pallets in the storage of sacked grain for feeds. The illustration showed a fork lift truck with a push-pull attachment drawing the paper palletized pile of grain onto the forks. Could you advise who manufactures the push-pull attachment referred to?

Lawrence Brown
Rice City Milling Co.

Several sources of engineering data on pneumatic conveyors have been sent to reader Brown, as has the name of a manufacturer of a push-pull attachment. Other readers in need of similar information are invited to present their problems to FLOW. The Editors will be only too happy to oblige.

To FLOW:

We have a problem of lifting empty kegs, 12 in. diameter by 18 in. long, from the first to the second floor, (approximately 16 ft.). We would like to know if you could put us in contact with a manufacturer that makes one of these "arm" conveyor elevators that would lift the empty kegs in a vertical position to the second floor and construct the mechanism so that the kegs could be returned to the first floor on the same elevator.

E. C. Harris
Pawtucket Mfg. Co.

Normally, arm type conveyor elevators are so constructed that the carrying members are cradled slightly to retain the loads during travel. This, of course, makes it impossible to carry loads on the return run, since a keg would roll off the convex surface. However, it is possible that manufacturers of such equipment could design carrying arms with lugs at each end of a horizontal member. This would prevent the load from rolling off and at the same time could be used in both directions. (Names and addresses of several firms have been sent to Reader Harris for follow-up.)

Experience Proves Their Value

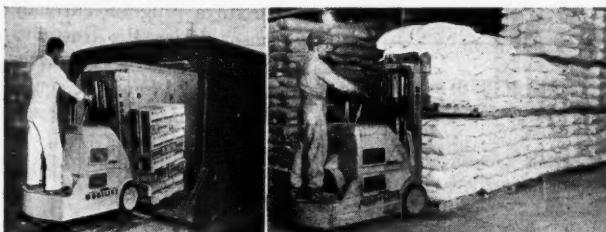
MOBILIFT Stand-Up FORK LIFT TRUCKS

...They're More Maneuverable
...They're Quicker
...They Do More Work

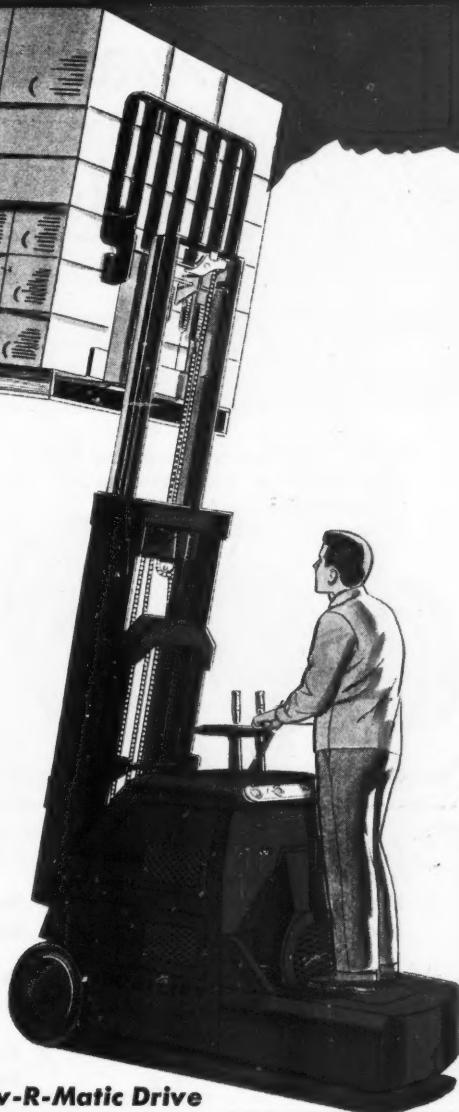
Across the nation industries agree that MOBILIFT'S 15 years experience in building and improving STAND-UP fork lift trucks assures an efficient, hard-working truck... speedy and maneuverable in tight places. Operators prefer MOBILIFT'S unobstructed visibility...easy, less fatiguing handling...safety.



Unequalled maneuverability...short turning radius...unobstructed forward-backward visibility...grouped push-pull, positive action controls...safe "deadman" brake...these and other exclusive features make MOBILIFT Stand-Up models equally fast and efficient in crowded or roomy work areas.



Whether you need a 2,000-lb. capacity fork truck with 63" mast for loading and unloading trucks, or a 3,500-pounder with 72" mast and 110" lift for your warehouse, a MOBILIFT Stand-Up model will do your job quicker, safer, and at less cost.



Lev-R-Matic Drive

Lev-R-Matic, grouped 2-way PUSH-PULL levers give instant, finger-tip control...forward, back, elevating, and tilting. MOBILIFT multiple disc clutch insures smooth, positive action...**THERE ARE NO GEARS TO SHIFT!**

Mobil-Chain Lift...Controlled power, roller-chain-operated lift allows unobstructed view between uprights.

MOBILIFT'S 3-cylinder heavy duty engine is air-cooled, compact, well-balanced and operates smoothly for long trouble-free service.

STAND-UP MODELS IN 2,000, 2,500, 3,000 and 3,500-POUND CAPACITIES are available with 63", 72" and 83" MASTS. (Special Mast Heights to Order.)

MOBILIFT users and operators say: "We get more work done at less cost, because a man on his feet is worth two on his seat!"

WRITE TODAY FOR COMPLETE SPECIFICATIONS



MOBILIFT CORPORATION

835 S. E. MAIN ST., PORTLAND 14, OREGON

2317 W. 18th, Chicago • 790 Fairmount Ave., E. Rutherford, N. J. • 2724 Taylor St., Dallas
1867 E. 28th, Los Angeles • 1113 Spring St., N.W., Atlanta • 2730 San Pablo Ave., Berkeley

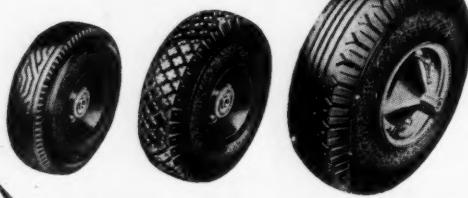
Circle No. 11 on Reader Service Card for more information

ATTENTION: PURCHASING AGENTS

Specify **GENERAL**

**Wide-Base Pneumatic Tires
On All Your New Equipment**

Available separately or in assemblies of Tires,
Tubes and Wheels. Size O. D. 8" to 27"—
200 to 4000 lbs. capacity for
low or high speeds.



**THE
GENERAL
TIRE**

SAVE TIME • LABOR • MONEY

- ★ More Load Capacity at Low or High Speeds
- ★ Slow, Even Wear for Long Service
- ★ Cushion Equipment and Loads, Reducing Breakage and Spillage
- ★ High Flotation for Easier Rolling over Soft Ground
- ★ Save High Cost Floors and Floor Surfaces
- ★ Broad Tread Width Rolls Easier, Smoother over All Surfaces

**Here are a Few of Many Nationally Known Manufacturers
Who Design Equipment on Generals**

- The Colson Corporation
- Parker Sweeper Company
- Kwik-Mix Company
- The Fairbanks Company
- The Prime Mover Company
- Moellenbrock & Wilke
- G. H. Tennant Company
- The Rapids Standard Co., Inc.



CASTER FORKS

Rigid and swivel castor forks for these tires available singly or as identical pairs in a wide range of sizes.

SEND FOR CATALOG . . . DEPT. 2



The GENERAL TIRE & RUBBER Co. • AKRON, OHIO

**Association and
Society News**

• Over 150 registrants attended the recent Atlantic Regional Conference of the American Material Handling Society. The Workshop seminar type conference was sponsored by the Albany, Montreal, New England, New Jersey, New York, Philadelphia and Syracuse chapters of the society, and the Connecticut Valley Material Handling Society. The steering committee consisted of: C. W. Meldrum, Bond Industrial Equipment Sales Co., Inc., N.Y.—General Chairman; John Bayuk, Jenkins Brothers, Connecticut Valley; Jay Broady, General Electric Co., Albany; E. S. Kostro, Philco Corp., Philadelphia; F. D. Lindquist, Crompton & Knowles Loom Works, New England; G. A. Smith, International Business Machines, Syracuse; Arthur Snyder, Gould National Batteries, New York; A. Van Riper, Concoleum Nairn, New Jersey.

• The Material Handling Institute's User-Editor-Manufacturer Symposium held May 22 and 23 at the Drake Hotel in Chicago covered the subject of Scrap Handling. It was held as part of a program currently being sponsored by the Institute. Workshop-type clinics where manufacturers of material handling equipment gather with users in closed sessions at a problem-solving level, are among the major activities of the program.

• "Conveyor Belts in Material Handling" was the theme of a recent meeting of the Northeastern Ohio Division of the Industrial Packaging and Material Handling Engineers. Speakers included E. R. Traxler, chief engineer in charge of field engineering and development of flat belting for the B. F. Goodrich Tire & Rubber Co., and N. M. Sullivan, chief engineer for the Alvey Ferguson Co.

BARRETT

LIFT-TRUCK and SKID SYSTEM



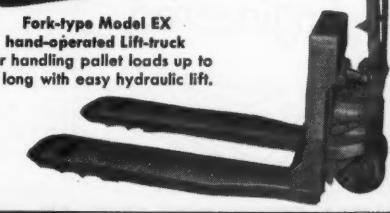
Above: Popular Hydrolift Model ED hand-operated Lift-truck. Easily handles 2500 lb. loads. Available in 4000 and 6000 lb. capacities. 7 strokes for full 4" lift.



STEELLEG SKIDS. Replaceable hardwood platforms; manganese steel angles. Any width and length. Plain, box-top or stake platform.



SINGLE STROKE HAND LIFT-TRUCKS just run truck under skid and raise with ONE STROKE. Step on release treadle—load lowers gently by hydraulic check. Model J (illustrated) 2500 lb. cap., 17 1/2" and 23 1/2" wide. Model R, 4000 lb. cap., 17 1/2" and 24 1/2" wide.



Fork-type Model EX hand-operated Lift-truck for handling pallet loads up to 60" long with easy hydraulic lift.

Put an end to multiple handling. Repeated loading, unloading, piling and unpiling waste your time and money. One Barrett hand-operated Lift-truck moving skid loads, will speed your room-to-room, floor-to-floor storage and shipping operations. Let the versatile, mobile **Barrett System** take care of all intra-plant material handling at surprisingly low cost.

HOW THE BARRETT SYSTEM SAVES YOU MONEY

1. Load stays on the skid wherever it goes—always ready to move.
2. The Barrett Lift-truck moves skid loads as units where and when you want them—fast!
3. Only one operator—not a 3- or 4-man handling crew.

A Barrett engineer will gladly show you how to move more material in less time, with less man power. There is no obligation, of course. Write for Bulletin 5110.

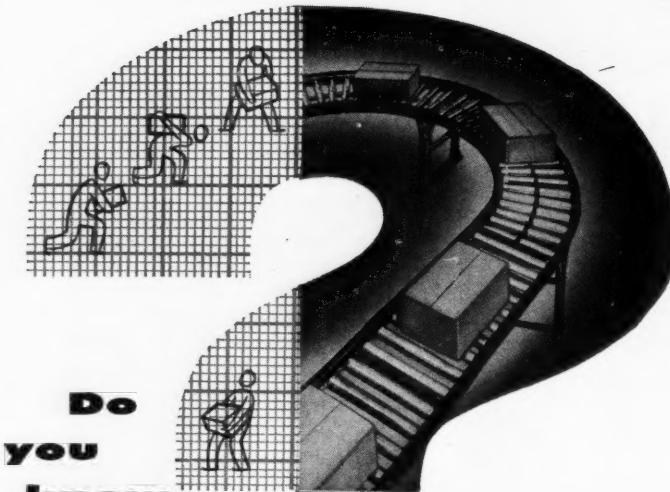
BARRETT - CRAVENS COMPANY
4619 S. Western Blvd., Chicago 9, Illinois
Representatives in All Principal Cities
Canadian Licensee: S. A. Armstrong, Ltd., Toronto, Canada



BARRETT

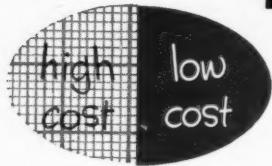
ONE MAN DOES MORE THAN 3 OR 4... WITH A BARRETT

Circle No. 13 on Reader Service Card for more information



DO
you
know

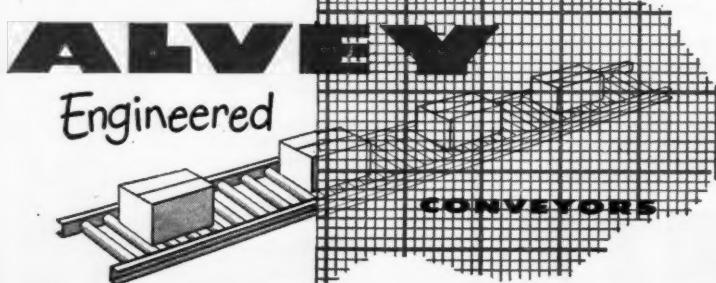
what you pay for package handling?



Newer type packages may have outmoded your present package handling methods. An over-all study of your equipment and handling methods may reveal considerable savings that can be realized by modernization.

put
your
packages

An experienced Alvey Engineer is available to confer with your technical staff in reviewing your present conveyor system and package handling methods. There have been many interesting cost saving devices and ingenious innovations developed recently in package handling equipment that may have application in your plant. Do call in an Alvey materials handling expert. No obligation, of course.



ALVEY CONVEYOR MFG. CO., 9299 Olive Street Road, St. Louis 24, Mo.
Circle No. 14 on Reader Service Card for more information

14

• Principal speaker at the last monthly meeting of the Philadelphia Regional Division of the Society of Industrial Packaging and Material Handling Engineers was J. Hartley Bowen, head of the Hi-Polymers Division, U.S. Naval Air Experimental Station, Philadelphia. He explained the development of and demonstrated the Gelbo Flex Tester. This machine was developed as a means of testing various barrier materials as to their flexing characteristics, and its use has been incorporated into one of the new government specifications for barrier materials.

• Fred V. Gardner, of the management consultant firm Fred V. Gardner and Associates was featured speaker at the recent quarter-annual Material Handling Institute membership meeting at the Edgewater Beach Hotel in Chicago. His remarks were centered on the determination of a breakeven point in the manufacture of material handling equipment.

• The second Area Material Handling Conference of the American Material Handling Society was held recently at the University of Buffalo. It was conducted by the following chapters of the society; Cleveland, Niagara Frontier, Northwestern Pennsylvania, Rochester, Toronto, and the University of Buffalo.

• The Philadelphia Regional Division of the Society of Industrial Packaging and Materials Handling Engineers was addressed at its last meeting by Norman Shikes, Manager, Material Handling Division, Radio Corporation of America. Shikes, drawing on his eighteen years experience in the field of Materials Handling, spoke on the subject "Promotion of a Materials Handling Program". It was pointed out that since Industrial Packaging and Material Handling is one of the newest phases of Industrial Engineering it must be approached like any new product or subject and promoted through advertising. In this case however, the advertising must take place within one's company rather than externally. Mr. Shikes then went on to explain how this is accomplished at RCA.

• The Packaging Machinery Manufacturers Institute will hold its twentieth annual meeting at the Homestead, Hot Springs, Virginia, **Turn to page 105**

the last
Philadelphia
Society of
Material
Hartley
Divisions
Explained
Illustrated
Machine
Testing
to their
house has
the new
carrier

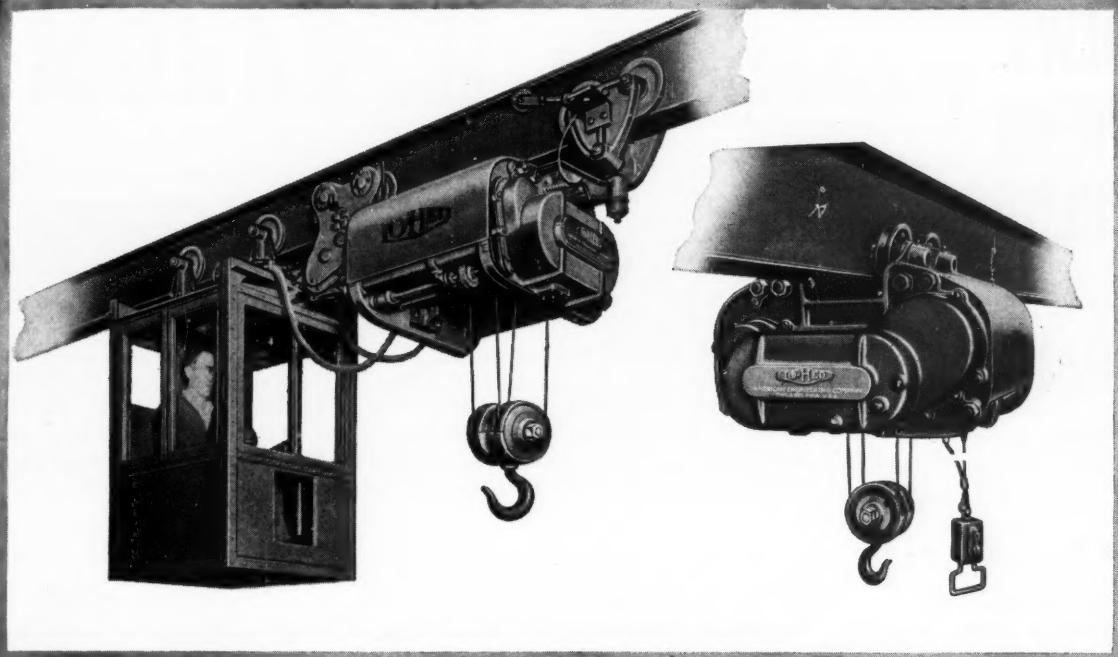
anagement
Gardner
Speaker
Material
to meet
otel in
centered
akeeven
material

erial
America
ty was
of Buf
follow
veland,
n Pen
and the

nal Di
Industrial
handling
its last
anager,
Radio
s, draw
experience
handling,
on of a
It was
Industrial
lling is
Industrial
hed like
nd pro
In this
g must
Company
Shikes
is ac

achinery
ill hold
at the
virginia,

FLOW



In hoists of capacities up to 12 tons **GET THESE LO-HED EXTRAS!**

WHATEVER SIZE HOIST you want up to 12 tons capacity, you also want the time- and money-saving extras that come in Lo-Hed Hoists. Every Lo-Hed, from $\frac{1}{2}$ ton up, has these extras... and they're yours at no extra cost.

Take the bottom block of a Lo-Hed Hoist, for example. It's completely shrouded to prevent the possibility of accidents. For further safety, a transformer on all A.C. installations puts 110 volts instead of line voltage at the push button controls. To cut lost time, the Lo-Hed's hook is suspended on an oil-impregnated bearing that prevents tangled lines.

In every feature of design and construction, Lo-Hed Hoists are your assurance of longer working life and lowest materials handling costs. Lo-

LO-HED MEANS LOW OVERHEAD

Heds are made in five suspension types and in a capacity range from 500 to 24,000 lbs. Their "balanced" design gives you low headroom, too, at no premium.

Mail coupon for full information leading to new efficiency and economy.

LO-HED CAR PULLER... rugged
... electrically-driven...
moves railroad cars on private sidings cheaply and safely... cuts demurrage costs...
Saves money inside a plant, too; pulls anything within its capacity that can roll or slide... up grades, around corners.



American Engineering Company
2531 Aramingo Avenue, Philadelphia 25, Pa.
Gentlemen: I am certainly interested in efficiency. Send me full information about Lo-Hed Hoists... Lo-Hed Car Pullers.

Name _____ Title _____
Company _____
Address _____
City _____ Zone _____ State _____

**AMERICAN ENGINEERING
COMPANY
PHILADELPHIA 25, PENNA.**

AE Products are: Taylor and Perfect Spread Stokers,
Marine Deck Auxiliaries, Hole-Show and Hydramile
Fluid Power, Lo-Hed Hoists, Lo-Hed Car Pullers.



Circle No. 15 on Reader Service Card for more information

NEWS VIEWS TRENDS

DATE TO REMEMBER

The 1952 SIPMHE Packaging and Material Handling Exposition will be held at the Chicago Coliseum, Oct. 14, 15 and 16 according to an announcement by president Stanley Price. The annual short course on material handling and packaging will be conducted by the department of mechanical engineering of the University of Illinois, College of Engineering, Extension Division. As in the past, a survey will be made among members, and students of former years to help determine the program content.

CASTER AND FLOOR TRUCK MANUAL PUB- LISHED

The Caster and Floor Truck Manufacturers Association has published a manual entitled "Handbook of Manual Materials Handling Equipment". It was designed to fill a long felt need by the association for basic text material on its member companies' products. It presents correct terminology and basic fundamentals in readily understandable form, is approximately 54 pages in length, has many illustrations, and is in two colors. List price is \$1.00.

WESTERN PACKAGING AND HANDLING EXPO

Plans have been completed for the Fourth Western Packaging & Material Handling Exposition to be held in the Los Angeles Shrine Convention Hall, August 12, 13, and 14. The show will include an outdoor as well as an indoor exhibition. Concurrent with the exposition, a packaging and material handling institute will be conducted under the auspices of the University of Southern California and the Los Angeles Chamber of Commerce. The institute will be held on the university campus.

MEILI-BLUMBERG ACQUIRES HOUGH SWEEPER LINE

The Meili-Blumberg Corp. has completed negotiations with the Frank G. Hough Co. for the acquisition of its line of tractor sweepers. Meili-Blumberg will now distribute as well as continue the manufacture of all such sweepers under its own trademark.

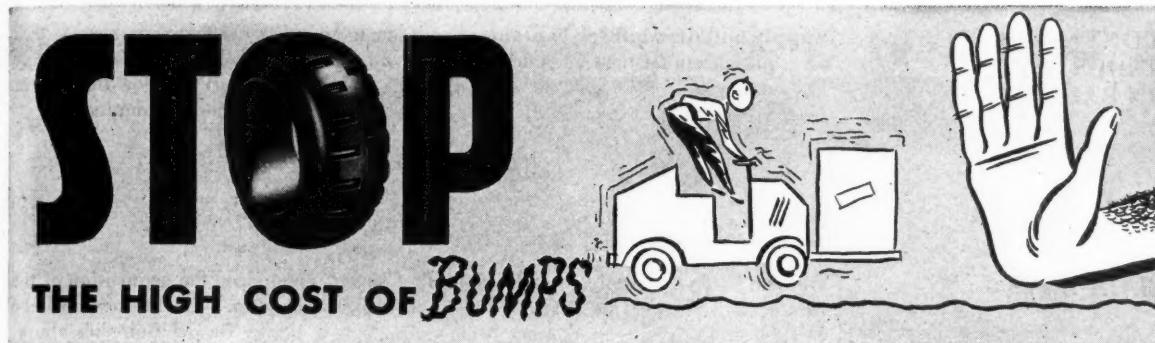
NEW CONVEYOR FIRM

A new division of the Smith Power Transmission Co. has been formed to develop, design, construct and install conveyor equipment for diversified industries. It has been dubbed, The Flexible Conveyor Co.

ELECT PRESIDENT AT ELECTRIC PRODUCTS

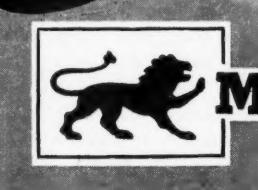
The Electric Products Company board of directors announces the election of Gordon J. Berry as president. Active for many years in the National Electrical Manufacturers Association, he has also supported and served the Industrial Truck Association and the Materials Handling Institute.

MONARCH *Mono-Cushions*®



It's a burly cushion tire made of tough, wear-resistant stock—all the way through. When you need a high capacity for absorbing shock and shock load Mono-Cushions are your best buy—even more desirable where loads are fragile and floor surfaces are rough.

The leading manufacturers of materials handling vehicles use Monarch Tires as original equipment. The manufacturer of your vehicles can supply you, through his distributors, with Monarch Tires engineered for your application.



THE
MONARCH
RUBBER COMPANY

501 LINCOLN PARK • HARTVILLE, OHIO
DETROIT OFFICE, 7-255 GENERAL MOTORS BUILDING

SPECIALISTS IN INDUSTRIAL SOLID TIRES AND MOLDED MECHANICAL RUBBER GOODS

Circle No. 16 on Reader Service Card for more information

NEWS, VIEWS, TRENDS . . . (cont'd)

CONTAINER INDUSTRY IN BALANCE

Supply and demand for containers continue to be in balance and it is expected that all requirements for the remainder of 1952 will be met, National Production Authority has announced in the "Containers and Packaging Industry Report" for the 4th quarter of 1951. The report touched on manufacture and use of all types of containers.

GAIR BUYS

George E. Dyke, president of Robert Gair Co., Inc. announced the acquisition of the American Coating Mills Division of Owens-Illinois Glass Co. The business will be carried on by American Coating Mills Corp., a new wholly owned Gair subsidiary, with principal office in Chicago.

WESTINGHOUSE- JOHNS HOPKINS AWARDS

An educational program, the Westinghouse-Johns Hopkins Awards in Electrical Engineering for 1952 has been established to help deserving young people pursue careers in the field of electrical engineering. The awards will enable thirty students a year to combine work experience at Westinghouse with technical studies leading to a Certificate in Electrical Engineering to be granted by McCoy College of The Johns Hopkins University. All high school graduates in the Baltimore or surrounding area who have not reached their 26th birthday by June 23, 1952 and who have a high school diploma or its equivalent plus trigonometry and who can meet the matriculation requirements at McCoy College are eligible for the awards.

SCRAP HUNT STILL ON

The intense search for scrap continues as strongly as ever. New, urgent requests that every industrial plant and all commercial establishments search again all plants and properties for dormant scrap come from the Defense Mobilizer. Two plants in the material handling field which have turned up scrap bonanzas recently are Lamson Corp. which has turned up almost 100 tons to date, and Jervis C. Webb which is moving out scrap at the rate of 30 to 40 tons each month.

NEW ADDRESSES FOR YOUR FILES

Hewitt-Robbins Inc., manufacturers of conveying and vibrating machines as well as hose and belting have opened an additional office in the Porter Bldg., 406 W. 34 St., Kansas City, Mo. In charge of the office will be Robert E. Crane, field engineer, formerly in charge of the company's Tulsa office.

Michigan Crane and Conveyor Co. has opened a new plant at 115 McKinstry in Detroit, Michigan. The new plant will greatly increase production space for the company.

Quaker Rubber Corp. announced the opening of a new stock carrying branch warehouse and sales office at 260 Schuyler Ave., Kearney, N.J. The new branch, with a floor space of approximately 9500 sq. ft. is under the supervision of A. H. Smith, district manager for the New York area. Quaker is a division of H. K. Porter Co., Inc.

勞工。• 1952 MODEL



No matter how good a man may be with a hand shovel and wheelbarrow, his production is many times greater as a "PAYLOADER" pilot. What's more — both he and his boss are happier because they both make more money.

In hundreds of plants "PAYLOADERS" have taken over unpleasant, laborious material-moving chores — saving time, cutting costs and increasing production. They scoop up, carry, dump, spread and stockpile all kinds of materials . . . lift, push . . . spot and unload box cars . . . handle clay, coal, coke, ashes, scrap, castings, barrels and crates . . . remove snow and do many other cost-cutting

jobs . . . release manpower for more productive work.

Every "PAYLOADER" is a complete Hough-built tractor-shovel designed specifically for tractor-shovel work, with multiple reverse speeds, large pneumatic tires and other features that insure fast, low-cost performance over floors or unpaved ground, up and down ramps, through congested areas. The "PAYLOADER" is sold by a world-wide Distributor organization with complete service facilities and seven sizes are available from 12 cu. ft. to 1½ cu. yd. bucket capacity. The Frank G. Hough Co., 731 Sunnyside Ave., Libertyville, Illinois.



JOB STUDIES

are available without cost or obligation. Each one is a detailed, authorized word-and-pic-

ture report of "PAYLOADER" performance in a specific plant. A request on your letterhead is all that's necessary.



PAYLOADER®

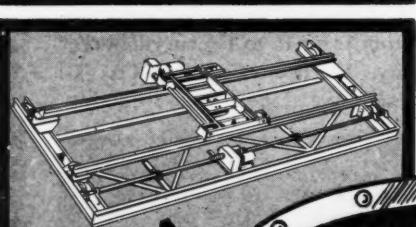
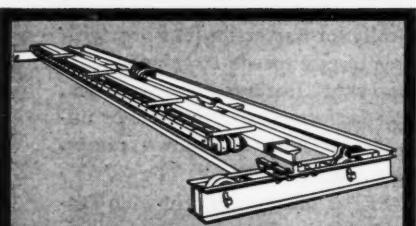
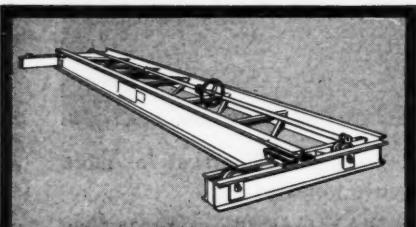
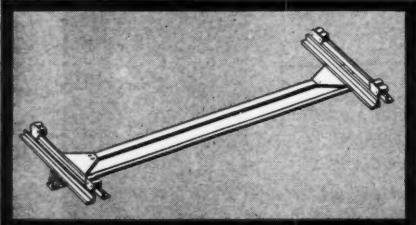


Circle No. 17 on Reader Service Card for more information



ON OUR COMPLETE LINE OF
**PRECISION
ENGINEERED
CRANES!**

Famous
Throughout the
Industry for
**DEPENDABILITY
DURABILITY
AND
LOW COST**



Write Today
for our informative
folder and specifica-
tion sheet!

**MICHIGAN
CRANE & CONVEYOR CO.**
115 MCKINSTRY AVENUE
DETROIT 9, MICHIGAN

Circle No. 18 on Reader Service Card for more information

MEN in the news



O. S. Carliss
Yale & Towne



Howard Neal
Aerol Co., Inc.

Illustrated

on this page are four basic type cranes used in industry, including hand pushed and hand geared models, plus single and double girder motor driven units with every automatic electric feature!

MAKE NO MISTAKE!

These are not just ordinary cranes! Engineered and manufactured by MICHIGAN, they combine rugged durability, dependability and a host of such plus-value advantages as anti-friction bearings at all moving points on bridge and trolley, and Fluid Drive which greatly extends the life of your crane while increasing its efficiency on the job!

WHAT'S MORE,

MICHIGAN uses all standard mill parts easily replaceable in any locality, thus eliminating costly "down time" losses! These are just a few good reasons why MICHIGAN is the fastest growing producer of cranes for American industry!

. . . at Aerol Co., Inc.

Appointment of four executives to assist in directing activities of Aerol and allied companies have been announced. Howard Neal is now assistant to the president; Legler Paxton is assistant sales manager for special design and fabrication; Ted Callis has been named assistant to Jim Lind, west coast regional manager, and Milton Ross has joined the engineering staff. The appointments were announced by Aerol President, Harry L. Oppenheimer.

. . . at Yale & Towne Mfg. Co.

Two new appointments have been announced. O. S. Carliss is the director of engineering of the Philadelphia Division of Yale & Towne Mfg. Co., and George F. Quayle is assistant director of engineering. Carliss succeeds Charles S. Schroeder and Quayle replaces Frank A. Vossenberg, who were appointed director and assistant director of the newly created company-wide research and development div. (This new division is covered elsewhere in this issue of Flow.—Ed.)

. . . at Automatic Transportation Co.

Promotion of Robert M. Whitney to the position of sales manager was announced by John A. Baldinger, general manager of Automatic Transportation Co. Whitney had been ad-

Acme Steel Stitching Insures S.A. (Safe Arrival)

ACME STEEL PRODUCTS DIVISION **ACME STEEL COMPANY** 2858 ARCHER AVE., CHICAGO 8, ILL.
OFFICES IN PRINCIPAL CITIES IN UNITED STATES AND CANADA

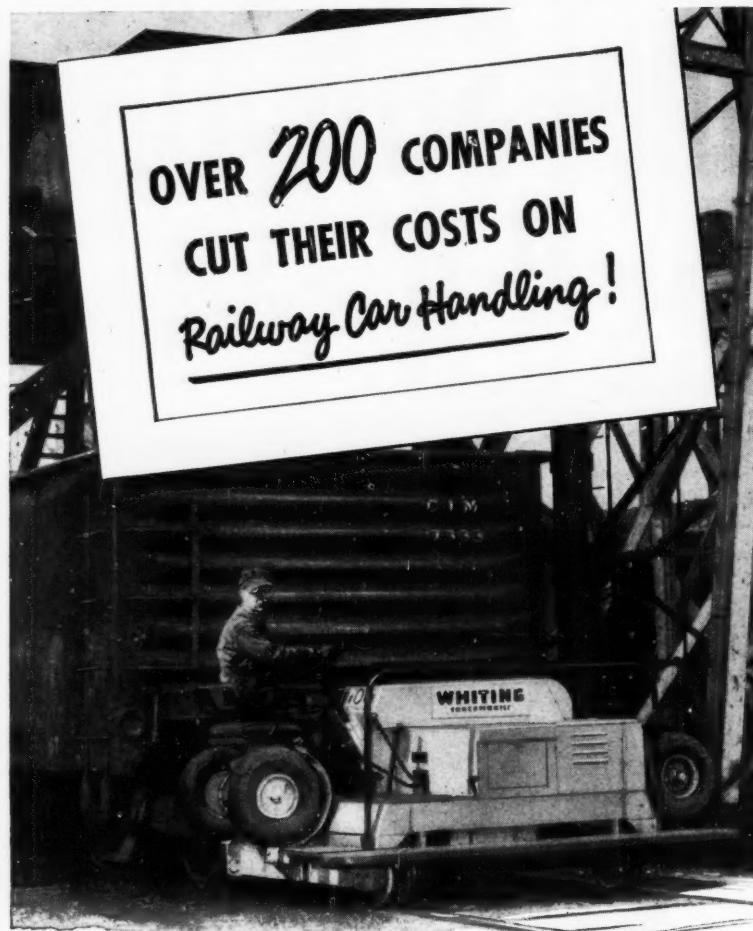
**ACME
STEEL**



Shipper everywhere are using Acme Steel wire stitchers to help reduce the annual loss of goods lost or damaged in transit estimated last year at \$160,000,000. Help the National Association of Shippers Advisory Boards by making your company's Perfect Shipping Campaign a year-round effort.



Circle No. 19 on Reader Service Card for more information



THE **W** WHITING **T** TRACKMOBILE



PROVED AT THE REFINERY
Standard Oil Company (Ind.) saves time on car moving and spotting at its Whiting refinery!



PROVED AT THE GRAIN ELEVATOR
Anderson Elevator Co., Maumee, O., speeds grain car loading and unloading!

Circle No. 20 on Reader Service Card for more information

PROVED AT THE COAL MINE

Coal by the carload . . . moved by the minute! Peabody Coal Company uses Whiting Trackmobiles to speed coal loading and car handling during construction of its new mine at Pawnee, Ill. . . . gains important savings in time and manpower. Other leading firms from coast to coast are achieving new efficiencies in car moving, spotting and switching . . . using Trackmobile **flexibility** to speed production, reduce demurrage and make manpower more productive. Whether you're handling cars of coal or candy, steel or sand, the Trackmobile can help you!



GET THIS NEW, OPERATION REPORT!

See the complete story on the Trackmobile at Peabody . . . facts of value to any industry seeking new economy in car handling. Ask for your copy today!

WHITING CORPORATION

15657 Lathrop Ave., Harvey, Illinois

Other Whiting Handling Equipment: Overhead Cranes • Economy Cranes • Electric Chain Hoists • Trambeam Overhead Handling Systems



Robert M. Whitney
Automatic
Transportation Co.



George H. Kubes
American Box Co.

vertising manager of the company since 1948. In his new capacity, he will direct sales operations for the company's rider type electric industrial trucks. He will continue to direct the company's extensive advertising and public relations programs.

... at American Box Co.

George H. Kubes, president of the American Box Co. was elected by the board of the Wirebound Box Mfg. Assoc. as director. Kubes is a son of the late founder of American Box.

... at Gould-National Batteries, Inc.

The industrial division of Gould-National Batteries, Inc. announced a widespread revision of its sales forces in eastern, midwestern and Pacific territories. F. A. Miller, former New York regional sales manager was elevated to co-ordinator of sales at Trenton headquarters, and Frank Keenan of the headquarters sales staff was promoted to its management. Pittsburgh and Detroit territories, hitherto administered by the Cleveland regional office, become bases for regional sales offices. O. W. Rider, former Cleveland district manager is the regional manager at Pittsburgh, and John P. Kelly manages the Detroit regional office. New appointee as regional manager in the New York office is Malcolm Janis. Stanley J. Mahurin, has been promoted to San Francisco district manager.

... at Minnesota Mining & Manufacturing Co.

Dr. Charles W. Walton has been appointed general manager of the adhesives and coatings division. R. P. Carlton, president, named Walton



company
capacity, he
s for the
ic indus-
to direct
lvertising
ms.

o.
sident of
lected by
Box Mfg.
a son of
Box.

of Gould-
ounced a
es forces
Pacific
mer New
was ele-
at Tren-
Keenan
staff was
o. Pitts-
hether-
land re-
for re-
Rider,
nager is
tsburgh,
the De-
ppointee
ew York
unley J.
l to San

LIMA does it UP and OVER!

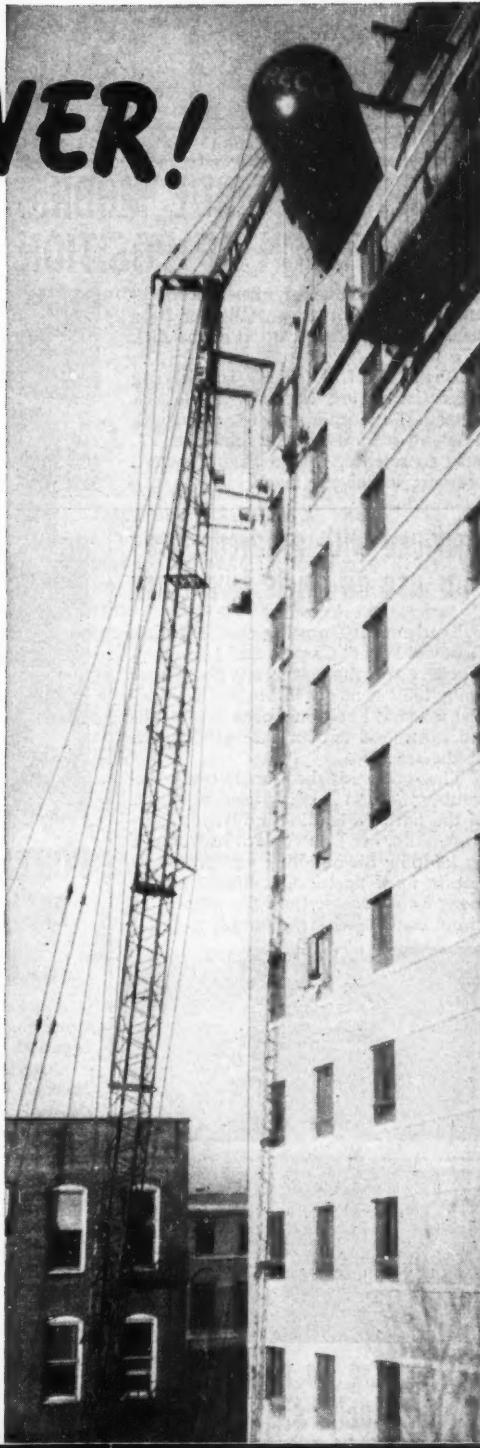
up!...up!...

... proof of the
extra versatility and
perfect balance of
LIMA CRANES

LIMA truck cranes are engineered not only for the made-to-order jobs, but with extra-capacity for the unusual jobs. Typical is the way this Lima 34-T, with 100' boom and 20' jib, hoisted this 24' x 22' x 8' steel tank to the roof of a Columbia, S. C. building. Though the weight was 12,650 lbs. and the height 108' the LIMA Crane made it possible to handle this tough assignment with ease and precision.

It's on jobs like this that owners and operators appreciate the stability, maneuverability and smooth, easy control of LIMA 34-T Cranes. Their unparalleled stability permits the use of long booms at low angles and extra-high reaches with jib attachments.

Built with crawler, truck or wheel mounting, LIMA Cranes have travel speeds that range from 1 mph to 31 mph depending on mounting. Rubber-mounted machines have capacities up to 35 tons depending upon the type, and are available with crane, dragline or pullshovel front ends. Baldwin-Lima-Hamilton Corporation, Lima-Hamilton Division, Lima, Ohio.



OFFICES IN PRINCIPAL CITIES OF THE WORLD
BALDWIN-LIMA-HAMILTON
 SHOVELS • CRANES • DRAGLINES • PULLSHOVELS • TRUCK CRANES

Circle No. 21 on Reader Service Card for more information

Panel discussions on how casters help reduce the "Reducible 30%"^{**}

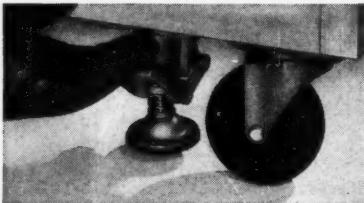
MATERIALS-HANDLING FORUM

A SERIES PUBLISHED BY BASSICK, WORLD'S LARGEST MANUFACTURER OF CASTERS AND FLOOR PROTECTION EQUIPMENT

EQUIPMENT MADE MOBILE OR HELD RIGID AT TOUCH OF POSITION LOCK LEVER

Now a machine or piece of equipment can be either portable or held securely in a fixed position at the flick of a lever.

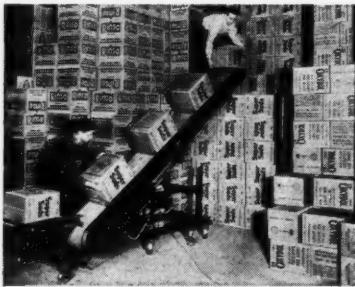
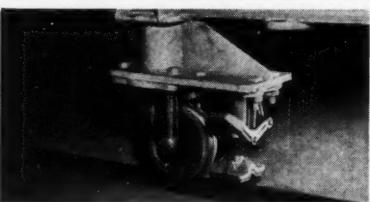
This is achieved by installing Bassick Position Locks with Bassick Casters. The lock is easy to apply, with a downward press of the foot lever . . . easy to release, with a slight upward pressure under the lever.



Equipped with grooved base for use on angle iron track

Equipment moving on Bassick Grooved-Wheel Casters and angle iron track reaps the extra advantage of being held securely in place when special Bassick Position Locks are installed, equipped with a base grooved to fit the track.

The grooved-wheel-angle-track assembly method is being used by many of the nation's leading industries (aircraft, auto, etc.) to control movement by keeping all handling equipment in line in fixed position. It makes movement 3-to-1 easier than flat wheels in direct contact with the floor.



PORTABLE CONVEYOR EFFICIENCY UPPED BY POSITION LOCKS

A greater and more efficient utilization of conveyors is possible with casters and position locks.

Conveyor sections mounted on Bassick Casters can be moved where desired and held securely and safely by Bassick Position Locks while in use.



Boxing ring on casters and position locks easily moved or held rigid

A unique installation of casters and position locks on alternate legs makes possible easy handling of this boxing ring in an armory.

Bassick Position Locks give adequate stability under rough usage. The ring can be moved quickly and easily by two or three men.

Moving assembly line made stationary when necessary

Many industries require an assembly line that can be held rigid during certain steps of manufacture.

This is accomplished by installing Bassick Position Locks on caster-equipped trucks. Universal joint action compensates for unevenness of floor surfaces.



Write us how you've used casters to solve specific handling problems. \$25.00 will be paid for material used.



Securing portable work ladder in place adds safety feature

Safety can now be economically and efficiently added to the flexibility afforded by caster-equipped work ladders, scaffolds, benches, tool stands, work stands, engine stands, etc.

Bassick Position Locks provide this safety factor . . . placing, when applied, almost 12 square inches of friction locking surface in contact with the floor.

Full details available upon request

Write for catalog data on Bassick Position Locks. There is a local distributor of industrial supplies in your vicinity who handles Bassick casters, wheels and locks for every need. Factory engineering assistance readily available. THE BASSICK COMPANY, Bridgeport 2, Conn. In Canada: Belleville, Ontario.



*According to cost analysis, materials-handling (about 30% of total cost) affords about the only real opportunities for cost reduction today.

Bassick
A DIVISION OF
SW
WARNER

MAKING MORE KINDS OF CASTERS . . . MAKING CASTERS DO MORE

to succeed **Louis F. Weyand** who was recently made executive vice president in charge of all 3M tape operations.

Appointment of three general managers to head tape divisions were announced by Weyand. **C. C. Smith**, former general sales manager of the tape division was named head of the cellophane tape division. **William E. Zimmerman** was made general manager of the industrial tapes division. **Bernard W. Lueck** is the general manager of the masking tapes division. The company's other tape unit, the electrical and sound recording tape division will continue to be headed by **Robert L. Westbee**.

... at Clark Equipment Co.

V. L. Johnson, associated until recently with the Studebaker Corp., has been appointed regional sales manager of the Northeastern Region. He will make his headquarters at 165 Broadway in New York City, and will have in his territory, dealerships in New York, Albany, Boston, Jersey City, New Haven, Philadelphia, Wilmington (Del.), Harrisburg (Pa.), and Portland (Me.). Announcement was made by **Walter E. Schirmer**, vice-president of the Industrial Truck Division Sales.

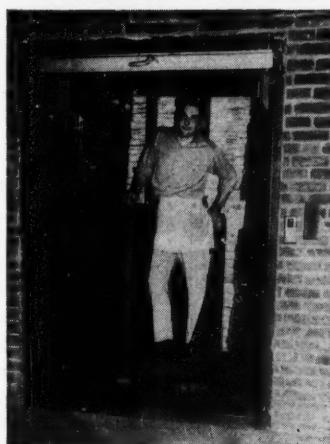
... at Thermoid Co.

Three Assistant vice-presidents have been added to the roster of officers, according to **Fred Schluter**, president. **Fred Mattheis**, presently assistant sales manager of Thermoid's industrial rubber division; **Alvan Campbell, Jr.**, production planning manager and service manager of special sales; and **Tharon J. Ellis**, factory superintendent of the rubber division, are the new vice presidents.

... at Unistrut Products Co.

Cornelius Elasasser, Jr. has been appointed eastern district manager, according to **Ralph F. Butler**, vice president. Elasasser will super-

(Turn to page 104)



4 PICTURES TELL THIS TRUCK'S STORY

1 IT TRANSFERS DIES

Time to change dies — and one man does it with this RAYMOND Platform-Type Electric Tiering Truck. The truck elevates to storage rack height for easy die transfer, then speeds through crowded production areas, positioning the die right at the machine.

2 SPEEDS UP SHIPPING

Loading is fast when this RAYMOND Platform-Type Truck lends a helping hand. So compact, so maneuverable it operates with ease in boxcars, truck trailers, elevators. Features patented* knee-action swivel caster to compensate for uneven floors.

3 BRINGS MATERIALS

Production hums with the RAYMOND Platform-Type Truck to keep raw materials coming. It actually operates in aisles where only hand trucks once went, thanks to its short length and patented* off-set drive wheel with 200° turning arc.

4 STORES PARTS

It's a quick trip from plant floor to warehouse with this RAYMOND Platform-Type Electric Truck. It travels up to 3 1/3 mph loaded, 4 mph empty — operates safely on low-capacity elevators, floors — comes in both 2,000 and 4,000-lb. capacity models.



PLATFORM-TYPE ELECTRIC TIERING TRUCK

For More Facts send for Bulletin 710! Ask to see the RAYMOND Platform-Type Tiering Truck demonstrated. *PATENT NO. 2,564,002

The RAYMOND CORPORATION

Formerly LYON-Raymond Corporation

3377 Madison St., Greene, N.Y.

Gentlemen: Please send me Bulletin 710 on your Platform-Type Tiering Truck. I'd like to see a demonstration: Yes No.

NAME _____

COMPANY _____

STREET _____

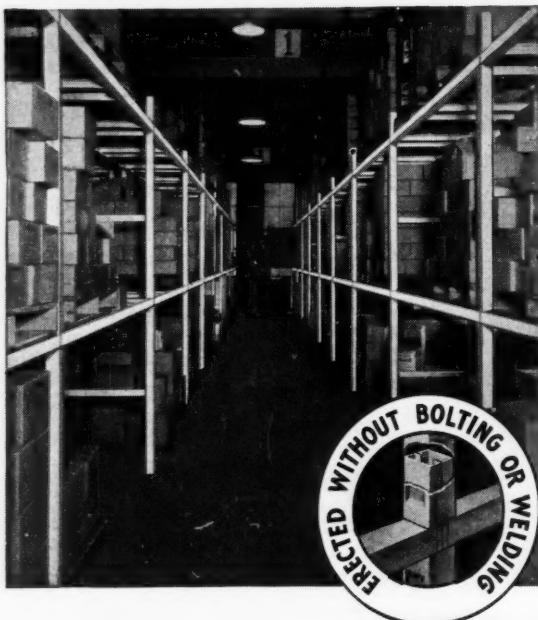
CITY _____ STATE _____

**from coast to coast
business acclaims**



**the ideal racks to fit
every storage need**

**here's another
American Rack installation**



Send for Catalog



5963 Linsdale • Detroit 4, Michigan

Circle No. 24 on Reader Service Card for more information

26

Thanks For Your Help....

It takes a lot of help to publish an issue such as this one. FLOW is happy to list below those manufacturers of material handling equipment who were of such great help to us in preparing the material in this special issue. This is not a directory of all firms who manufacture handling equipment designed expressly for bulk material or equipment designed for general use. It is only a listing of those firms who actively aided our editorial staff. Our special thanks also to Don Kelsey, Don W. Kelsey Co., Detroit, for the time he spent in directing us to worthwhile installations in his city.

Allis-Chalmers Mfg. Co. (tractors and tractor attachments)

All-Steel Welded Truck Co. (bulk material vehicles)

Alvey Conveyor Mfg. Co. (conveyors)

American Monorail Co. (monorail equipment)

Associated Cooperage Industries of America, Inc.

Automatic Transportation Co. (industrial trucks)

Baker-Raulang Co. (industrial trucks)

Baldwin-Lima-Hamilton Co. (powered cranes and shovels)

Barber-Greene Co. (conveyors, loaders)

Baughman Mfg. Co. (conveyors)

Belt Corp. (conveyors)

Bemis Bros. Bag Co. (bags)

Bin-Dicator Co. (devices for measuring bulk material in bins, etc.)

Brummeler Steel Products Corp. (hoppers, etc.)

Bucyrus-Erie Co. (power cranes and shovels)

Buda Co. (industrial trucks)

Butler Bin Co. (scoop attachments, bins)

Cambridge Wire Cloth Co. (wire mesh conveyor belting)

Caterpillar Tractor Co. (industrial tractors)

Chain Belt Co. (conveyors)

Chisholm-Moore Hoist Corp. (bridge cranes & hoists)

Clark Equipment Co. (industrial trucks)

Cleveland Vibrator Co. (vibrators)

Coles Cranes Inc. (mobile cranes)

Colson Equipment & Supply Co. (bag dumpers)

Conco Engineering Works (bridge cranes & hoists)

Continental Can Co. (containers)

Crescent Truck Co. Div. of Barrett-Cravens Co. (industrial trucks)

Dempster Bros. Inc. (bulk material vehicles)

W. C. Dillon & Co. (crane scales)

Dracco Corp. (pneumatic conveyors)

Elwell-Parker Electric Co. (industrial trucks)

Fuller Co. (pneumatic conveyors)

Gaylord Container Co. (containers)

Gerotor May Corp. (pneumatic systems for freeing sticky materials in bins, etc.)

Getman Bros. Mfg. Div. (bulk material vehicles)

his one.
of ma-
help to
This is
andling
er equip-
of those
special
Detroit,
e instal-

attach-
les)

c.
(s)

s and

material

elting)

hoists)

sts)
indus-

reeing

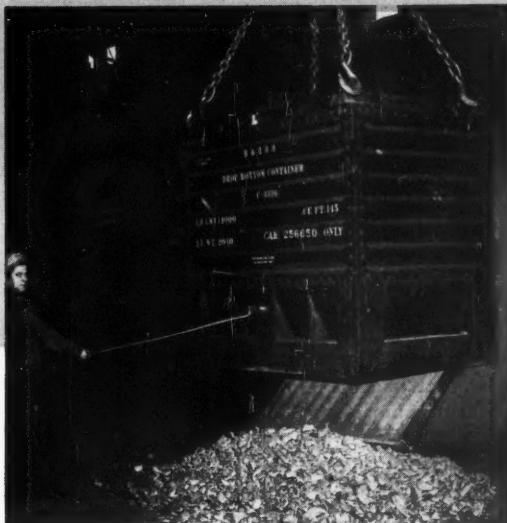
FLOW

On The Job...

YOUNGSTOWN'S



Youngstown's quick discharge bulk materials container in action at the Philo, Ohio plant of the Ohio Ferro-Alloys Corporation of Canton, Ohio.



Illustrating the ease, greater speed, savings in man-hours, efficiency and the elimination of double—drum hoists resulting from the handling of bulk materials in Youngstown drop bottom containers.

Consult with us for improved handling of your bulk materials.



YOUNGSTOWN STEEL DOOR COMPANY

CAMEL SALES CO.

CLEVELAND

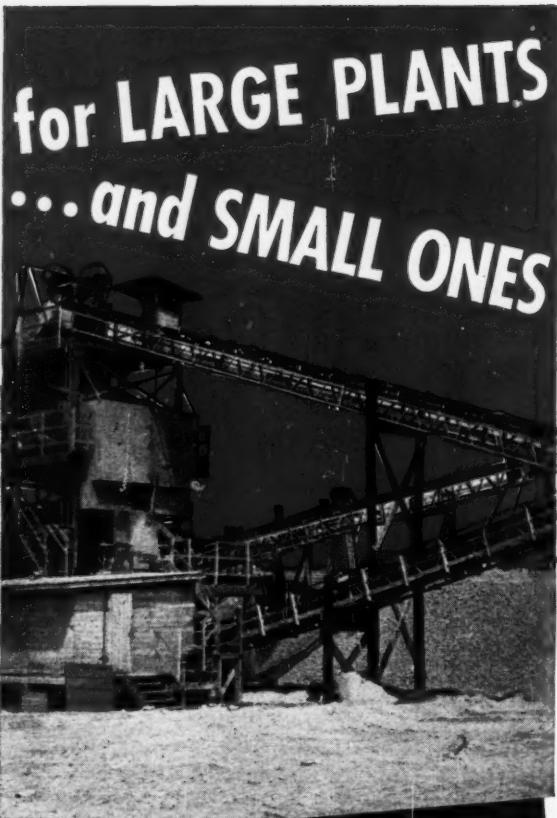
• CHICAGO

CAMEL COMPANY LIMITED

• NEW YORK

• YOUNGSTOWN

Circle No. 25 on Reader Service Card for more information



BAUGHMAN CONVEYOR ASSEMBLIES

Handle your bulk materials at the lowest cost per ton with Baughman "Standardized" units. All drives and accessories designed to your individual requirements, yet manufactured in sectional assemblies to provide an efficient, economical plant operation at a much lower initial investment. Building all types of conveyors, elevators and unloaders, Baughman can provide a complete, well balanced, smooth operating plant that will give you longer years of service. All Baughman equipment is carefully engineered to insure satisfaction in every installation.

The principle of sectional assemblies used in fabricating Baughman Conveyors and Elevators makes it simple for your own men to assemble, move, lengthen or shorten with great saving in erection costs.

Write for complete information and the name of your nearest Baughman Distributor.



BAUGHMAN MFG. CO., INC.
ARCH STREET, JERSEYVILLE, ILLINOIS

Circle No. 26 on Reader Service Card for more information
28

B. F. Goodrich Co. (belting)
Goodyear Tire & Rubber Co. (belting)

Harnischfeger Corp. (cranes and hoists)
Holly Pneumatic Systems (pneumatic conveyors)
Frank G. Hough Co. (front-end scoop trucks)
Jacob House & Sons (bag dumpers)
Hydroway Scales Inc. (crane scales)
Hyster Co. (fork trucks)

International Paper Co. (bags & filling equipment)

Koehring Co. (power cranes & shovels)
Kwik-Mix Co. (powered barrows)

Lewis-Shepard Products Inc. (industrial trucks)
Link-Belt Co. (conveyors, car shakers)
Link-Belt Speeder Corp. (mobile cranes & shovels)
Lippman Engineering Works (conveyors)
Louden Machinery Co. (monorail)
Lull Mfg. Co. (scoop attachments)

Manning, Maxwell & Moore, Inc. (cranes and hoists)
Marietta Concrete Corp. (silos)
Market Forge Co. (industrial trucks)
May-Fran Engineering Co. (conveyors)
Mercury Mfg. Co. (industrial trucks)
Minneapolis-Moline Co. (tractors & cranes)
Mobilift Corp. (industrial trucks)

Neff & Fry Co. (silos)
Newaygo Engineering Co. (hoppers, vibrating screens & conveyors)
Nutting Truck & Caster Co. (bulk material vehicles)

The Osgood Co. (power cranes and shovels)

Palmer-Bee Co. (conveyors)
Paper Shipping Sack Manufacturers Association Inc.
Power Crane & Shovel Association
Prime Mover Co. (powered barrows)

Raymond Corp. (industrial trucks)
Robinson Air-Activated Conveyor Systems (pneumatic conveyors)
Roger Toffolon, Inc. (pallet binders)
Ross Carrier Co. (industrial trucks)
Roura Iron Works (self-dumping hoppers)

Sandvik Steel Inc. (steel conveyor belting)
Sauerman Bros. Inc. (drag scrapers)
Service Supply Corp. (shovel attachments)
Shepard-Niles Crane & Hoist Corp. (bridge cranes & hoists)

Stephens-Adamson Mfg. Co. (conveyors)
Syntron Co. (vibrators, conveyors)

Tew Shovel Co. (power cranes & shovels)
Whiting Corp. (car switching equipment)
Tote Systems Inc. (bulk material containers)
Towmotor Corp. (industrial trucks)
Transitier Truck Co. (industrial trucks)
Truck-Man Div. Knickerbocker Co. (industrial trucks)

DEPENDABLE!

DODGE SC
BALL BEARING
PILLOW BLOCK



EVEN AT LOW SPEEDS THIS SEAL *PERFORMS!*

It's the famous Dodge metallic-backed neoprene seal that has proved itself in thousands of installations. It stays put. It can't blow. It keeps lubricant in—dust and dirt out—even at low speeds.

The SC Ball Bearing Pillow Block for small shafts and moderate loads, is a precision-built unit—a member of the famous Dodge 30,000-hour line. Modern styling . . . rugged one-piece semi-steel housing . . . long inner race . . . radial and thrust load capacity . . . fully self-aligning. Available from distributors' stocks in shaft sizes from $\frac{3}{4}$ " to $2\frac{1}{16}$ ". Write for special bulletin giving complete specifications.

DODGE MANUFACTURING CORPORATION
2300 UNION STREET, MISHAWAKA, INDIANA

DODGE
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable assistance on new cost-saving methods. Look for his name under "Power Transmission Equipment" in your classified phone book.



SEALED-LIFE V-BELTS AND TAPER-LOCK SHEAVES



DODGE-TIMKEN PILLOW BLOCKS



ROLLING GRIP AND DIAMOND D FRICTION CLUTCHES

FOR YOUR NAME PLATE REQUIREMENTS, WRITE OUR SUBSIDIARY,
CHICAGO THRIFT-ETCHING CORPORATION, 1555 SHEFFIELD AVENUE, CHICAGO 22, ILLINOIS

Circle No. 27 on Reader Service Card for more information

Let's put the SPOTLIGHT on DEGREASING

FROM DEGREASER

by overhead conveyor
to plating



In racks or on pallets
BY LIFT TRUCK
to assembly



BY LIFT TRUCK
to assembly



BY HAND TRUCK
to inspection
and shipping



EVERY MATERIALS
HANDLING ENGINEER
WILL WANT THIS
BULLETIN!

Write for this bulletin describing the NesTier System, including complete information on racks, trucks, conveyor hangers, inserts. Our service includes complete engineering advice to systematize small parts handling in your plant.



In answer to the many demands, this new NesTier has been added to the NesTier System. Designed primarily for degreasing operations, the "lanced-bottom" NesTier permits rapid drainage without allowing even the smallest parts to slip through.

Now, there is no need to transfer parts for degreasing. The lanced-bottom box has all of the advantages of the standard NesTier—saving of space by the nesting and tiering features, ease of transportation and handling, adaptability to conveyor systems and the visibility and accessibility of contents.

TWO SIZES. No. 220—16 ga. steel, $22\frac{1}{8}$ " long, $5\frac{1}{16}$ " bails, weight 15 lbs. No. 175—18 ga. steel, $18\frac{1}{4}$ " long, $\frac{1}{4}$ " bails, weight 6 lbs. One piece welded construction, standard baked enamel, green.

NESTIER

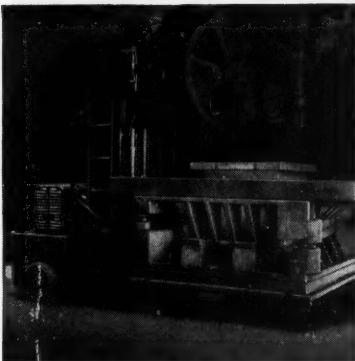
IT NESTS - IT TIERS

THE CHAS. WM. DOEPKE MFG. CO., Inc.
Metal Specialties Division
Rossmoyne, Ohio

B.F. Goodrich



Lift truck problems?



Hauling extra-heavy loads?



Homemade shop equipment?



Waste disposal?



General plant hauling?



Use hand trucks?

Where do you use industrial tires?

Here's how ~~THE~~ ANALYSIS can cut your costs

• We have a plan that is saving up to 50% on tire and wheel costs for industrial tire users. It's called the Tire & Wheel Analysis Plan. It's applicable no matter what your usage of industrial tires. On request and without charge, a man who knows industrial tire problems looks over your operations, analyzes your particular needs. Then he makes maintenance and service recommendations. He also recommends the exact type, size, tread design and tread compound which best suits *your* operations. He shows you how to save through retreading. Remember his recommendations are impartial because B. F. Goodrich makes *all* types and kinds of industrial tires. The BFG man has no axe to grind for just one or two particular types. He has them all.

See your nearby B. F. Goodrich Dealer for your immediate industrial tire needs. For additional information on the B. F. Goodrich Tire & Wheel Analysis Plan, use the attached coupon. A similar plan is available for manufacturers of industrial hauling equipment.



The B. F. Goodrich Co.
Department TW-184
Akron, Ohio

Please give me additional information on your new Tire and Wheel Analysis plan.

Name

Title

Company

City State

Circle No. 29 on Reader Service Card for more information

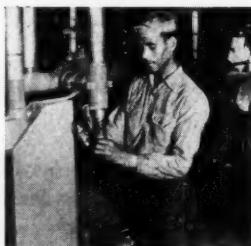


A nine-mile stretch at Firestone ... for Quality Control

Nine miles of Transitubes stretch throughout the Memphis plant of Firestone Tire & Rubber Company for delivery of in-process rubber samples to the lab. Over 6000 times a day samples are sent to the laboratory with reports returned before the material is ready for the next process. As a result quality control is more accurate, the production cycle is not delayed and one central laboratory can serve the entire plant.

This is but one example of how industry is using Transitubes for delivery of everything from general paperwork to small parts. Speeding along at forty feet per second, Transitube carriers provide fast, errorless delivery and eliminate the high cost of messengers. Because deliveries are continuous, the flow of paperwork smooths out, too, and that means greater operating efficiency in all departments. Chances are that there is a profitable application for Transitubes in your operations . . . why not investigate right away?

The complete story of Transitube economies and flexibility is in the Grover Bulletins. Write for yours, there is no obligation.



This view shows a sample being sent to the lab from a typical station in the plant.

news from the SALES FIELD

Walter J. Dahl has been appointed to the sales engineering staff of the **Baker Industrial Truck Co.** of Illiana, Chicago area Distributor for the **Baker-Raulang Co.** He will specialize in the application of mechanical equipment for handling in manufacturing plants.

C. Robert Kaiser has been appointed to the sales engineering staff of **M. M. Rivard**, Kansas City, Missouri. The company is a distributor for Baker-Raulang. He is an engineer with more than 15 years experience in the midwest, and will specialize in the application of mechanical handling equipment in manufacturing plants.

Two new sales representatives have been appointed by **C & D Batteries, Inc. King and Anderson**, 1355 Market Street, San Francisco and **Bruce MacDonald**, 1736 First Ave., Seattle have been appointed sales and service representatives in the west coast area. **Herbert King** will be in charge of the San Francisco office of King and Anderson and will cover Nevada and northern California. **F. H. Pelletier**, vice president of King and Anderson, will maintain offices at 3625 Fletcher Drive, Los Angeles, and will cover southern California. **Bruce MacDonald** will service the Oregon-Washington area from his headquarters in Seattle.

Reynolds Metals Co. has appointed three new distributors to increase the availability of aluminum and give better service to small users. **The Vinson Supply Co.**, 3331 Hagar Drive, Dallas, Texas will cover Dallas, Odessa, Texas, and Tulsa, Oklahoma. **Very's Bros. Inc.**, 65 E. Goodale St., Columbus, Ohio, will cover central and southern Ohio,



THE GROVER COMPANY

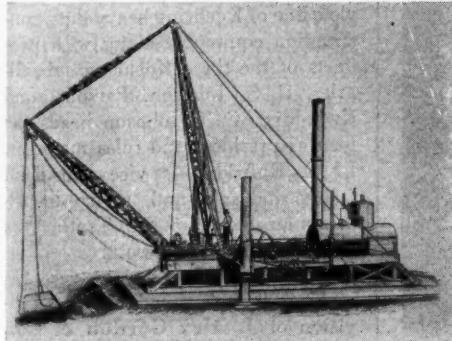
25527 W. EIGHT MILE ROAD

DETROIT 19, MICH.

Circle No. 30 on Reader Service Card for more information

he
D
—
n ap-
g staff
k Co.
ibitor
le will
f me-
ng in

100 Years of Progress in **OSGOOD** *Materials Handling Machines*



FIRST SUCCESSFUL DRAGLINE

1884 brought the development, by OSGOOD, of the first successful dragline . . . a far cry from modern OSGOOD giants, but far ahead of anything in its day.



Progress in materials handling equipment has been rapid during the past 100 years, but one thing has not changed. Now, as in 1852, the most efficient, most advanced machines are built by OSGOOD — oldest name in the power shovel and crane industry.

Through the years, OSGOOD has been noted for unparalleled engineering leadership, and today's OSGOOD machines are unequalled in ability to increase your profits.

You owe it to your future to investigate the many modern OSGOOD features designed to increase work capacity, reduce maintenance, and cut down-time. Find out why OSGOOD shovels are setting new production records on jobs from coast to coast. For additional information, write or wire the factory collect.

Equipment Designed with Your Profit In Mind



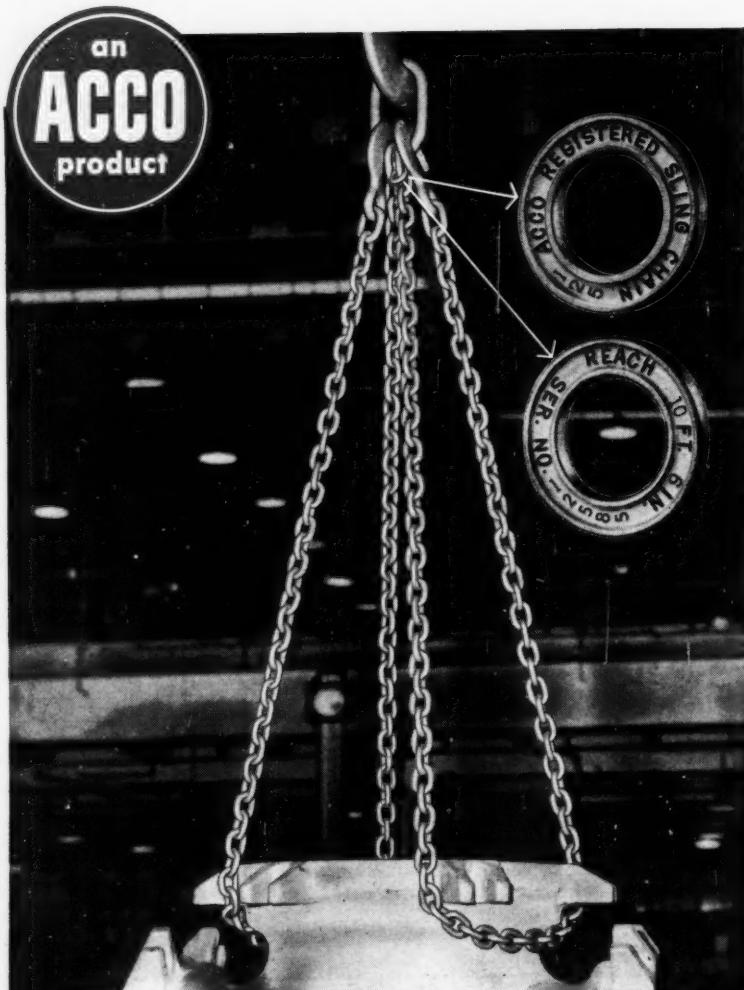
POWER SHOVELS, CRANES,
DRAGLINES, CLAMSHELLS,
PILE DRIVERS & HOES.
CRAWLER, TRUCK OR WHEEL
MOUNTED. DIESEL, GASOLINE
OR ELECTRIC POWERED.
CAPACITIES $\frac{1}{2}$ TO $2\frac{1}{2}$ CU. YD.

The OSGOOD COMPANY

MARION, OHIO

AFFILIATED WITH THE GENERAL EXCAVATOR CO.

Circle No. 31 on Reader Service Card for more information



ACCO Registered Sling Chains are Versatile

• Here an **ACCO Registered Sling Chain** is used in a double basket hitch. It could also be used as a two-legged bridle, or as a double choker. The tough 125 Endweldur **ACCALLOY** Chain is much lighter in weight and is easy to handle. It has great service life. The permanent identification ring on every **ACCO Registered Sling Chain** is your sign of safety and guarantee of quality for hook, lug, or trolley suspension.

See your **AMERICAN CHAIN** distributor. He'll show you how easy and economical it is to choose and use the best sling chains made.



AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles,
New York, Philadelphia, Pittsburgh, Portland,
San Francisco, Bridgeport, Conn.

Circle No. 32 on Reader Service Card for more information

34

American
Chain

western West Virginia, and Eastern Kentucky. **G. A. Avril Smelting Corp.**, Este Ave. & B&O Railroad, Cincinnati, Ohio will distribute ingot products only to all of Kentucky, south central Ohio southeastern Indiana, western West Virginia, and northern Tennessee.

The **Electric Products Co.** has appointed **Robert A. Young & Co.** as their Sales and Service representatives for southern California and the state of Arizona. With offices in Glendale, Young will handle all of the industrial lines of the **Electric Products Co.** . . . electrolytic motor-generators, general-purpose motor-generators, frequency changers, a-c and d-c motors and a-c and d-c generators.

The **Elwell-Parker Electric Co.**, has appointed the **Conlon-Lightbody Co.**, St. Louis, as sales agents in the St. Louis territory. The agents will handle sales of Elwell-Parker's complete line of gas and electric powered trucks, tractors and cranes. Partners in the new agency are Paul G. Lightbody, and Peter T. Conlon, Jr. Offices are located at 1931 Olive Street, St. Louis.

Recently appointed Koehring distributor for the entire state of Minnesota, the **Ruffridge-Johnson Equipment Co.**, will handle the complete line of Koehring heavy-duty construction equipment along with products of the three Koehring subsidiaries, C. S. Johnson, Parsons, and Kwik-Mix. C. T. Johnson heads the firm as president and sales manager, L. C. Ruffridge is vice president. Offices and sales and service departments are located at 250 Tenth Ave., Minneapolis 15, Minnesota.

Fork Truck Service, Inc., a division of **J. Alex Gordon & Co.**, Detroit representative for **Automatic Transportation Co.** has established new headquarters at 366 Eight Mile Road, Ferndale. Leonard Stark is manager of the organization.

Schuette Industrial Sales has been established by Jerry Schuette at 5835 West Bluemound Road, Milwaukee 13, Wisconsin. The organization will sell a complete line of equipment including industrial trucks, hoists, vacuum cleaners, industrial gas truck oil clarifiers and a metal disintegrator.

stern
ltting
road,
ingot
south
ludiana,
thern

has
t Co.
present-
nd the
Glen-
he in-
products
tators,
s, fre-
motors

Co.,
ight-
agents
agents
worker's
ower-
Part-
Paul G.
n, Jr.
Street,

g dis-
linne-
ason
the com-
y con-
pro-
bsidi-
, and
ls the
anager,
ident.
epart-
Ave.,

a di-
Co.,
matic
lished
t Mile
ark is

has
ette at
ilwau-
ization
ipment
hoists,
truck
egrator.

FLOW

Highlights Of The Month's News . . .

This is an important issue—one of the most important FLOW magazine has presented in a long time. It is important because the field of material handling has long overlooked the need for publicizing up-to-date methods for handling bulk material. In this special issue, we have started the ball rolling. In future issues, you will find additional articles detailing further developments.

Students at Fenn College in Cleveland will participate in a unique contest offering cash awards for the best paper on improved methods of handling industrial materials. The contest was made possible by a grant of \$5,000 from the Wunsch Foundation, (FLOW—March, 1952). The award was made in recognition of Fenn's contribution to the material handling field. Fenn was the first college in the U.S. to offer a course in material handling.

We'd like to call attention to the fact that the article in our April issue, "Versatile Walkie Saves Manpower, Speeds Production" was originally published in the Cleveland Engineering Society publication, "Cleveland Engineering". This was strictly an oversight on our part, but we're happy to mention this very excellent publication which is widely read in Cleveland engineering circles.

A new text on material handling, prepared especially for home study, has been added to the International Correspondence Schools' courses in Industrial Engineering, Factory Layout and Industrial Supervision. Written by Harry E. Stocker, material handling consultant, the new text covers equipment and methods used to handle material in production plants and in warehousing and storing. A section is included on the selection and training of personnel.



Spare the Back, and ... Speed the Load!

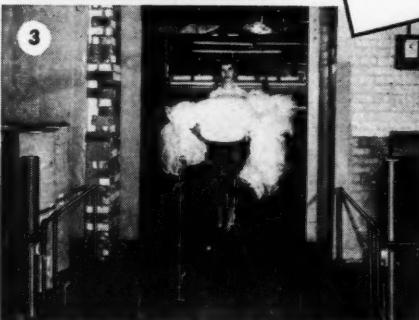
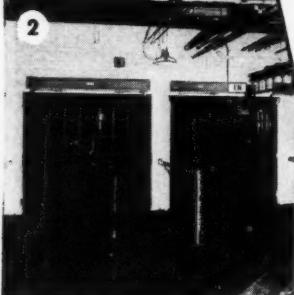
• This WRIGHT Speedway Hoist saves effort and speeds material handling. It's the modern way to move things in your shop. And the WRIGHT Speedway is the completely modern hoist.

In the Speedway you get alloy steel gears, self-lubricating ball and roller bearings, preformed improved plow steel cable, grooved drum, rigid metal weatherproof wire conduits, silver contact controls, and other important features. The WRIGHT Speedway is designed for long life and requires minimum maintenance. Capacities from $\frac{1}{4}$ to 10 tons.

See your distributor today or write us for literature.



Stanley Magic Door Controls For Specific Objectives



... and beyond the specific objective: operating efficiency

Whatever the door control requirements in your plant, there is a type of Stanley Magic Door Control—and in most instances, a choice of types—to meet that objective (see chart).

The ultimate objective, however, is not automatic door control, but plant operating efficiency—through man-hours saved . . . faster movement of materials . . . maintenance of a uniform humidity and temperature . . . safety to men, materials, and equipment.

**COMPLETELY AUTOMATIC DOOR CONTROLS
FOR SWINGING, SLIDING OR FOLDING DOORS**

A Stanley Representative will be glad to show you how Magic Door Controls, installed on your present doors, can help you achieve this *other* desired objective—at less cost than you might think. Write, stating your Specific Objective, to Magic Door Division. The Stanley Works, 3016 Lake Street, New Britain, Connecticut.

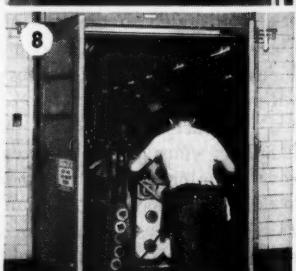
STANLEY
Reg. U.S. Pat. Off.
DOOR CONTROLS
"The Magic Door"
Hardware • Tools • Electric Tools • Steel Strapping • Steel

Circle No. 34 on Reader Service Card for more information

DESIRED OBJECTIVE	Horizontal Photoelectric Opening	Vertical Photoelectric Opening	Pull Cord	Push Button	To be used in conjunction with Photoelectric safety desirable	Opening Controls Time Delay
1 Door to be opened from a vehicle or by a pedestrian thru a broad approach area	yes	possible	yes	no	yes	possible
2 Door to be opened from a vehicle or by a pedestrian thru a restricted approach area	yes	yes	yes	yes	yes	yes'
3 Door to open for people whose hands are full (includes hand trucks)	yes	yes	no	no	yes	no
4 Door to open only for selected vehicles or pedestrian (See Picture No. 6)	no	no	no	by use of key	yes	yes
5 Monorail operation—Door to open for passage of overhead material handling equipment	yes	yes	yes with attendant	yes with attendant	yes	yes
6 Door cannot be opened by traffic but by guard from a remote control point	no	no	yes	yes	yes	yes
7 Air Lock Operation—Door to open only if other door or doors are closed	yes	yes	yes	yes	yes	no
8 Door to open only for traffic in one direction	yes	yes	yes	yes	yes	yes

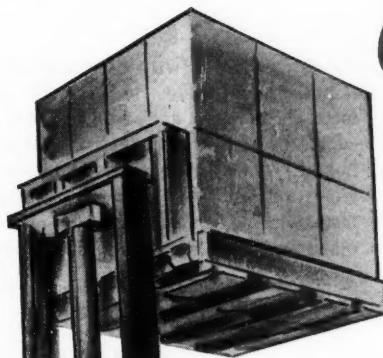
For Pedestrian traffic only—*Magic Carpet* may be best suited for the desired objective

These and other controls are used singly and in many combinations. Each installation is engineered to suit the particular objective and to fit the individual traffic problem.



STOP DOWNTIME . . .

Cut Handling Costs!



The Gould "Thirty"—
America's Finest
Industrial Truck Battery



It costs real money when a truck goes out of service because of battery failure. There are two sure ways to keep materials moving, men and machines working: 1. Power your trucks with Gould Industrial Batteries; 2. Maintain all your batteries, regardless of make, with the Gould Plus-Performance Plan. This free system of preventive maintenance is making money for hundreds of industrial firms by helping them keep their batteries new, longer.

It will pay to learn more about Gould Industrial Truck Batteries and the Gould Plus-Performance Plan. Write Gould Battery Information Headquarters for full information.

GOULD

Industrial Batteries

GOULD- NATIONAL BATTERIES, Inc., TRENTON 7, N.J.

Always Use Gould-National Automobile and Truck Batteries

Circle No. 35 on Reader Service Card for more information

What's

NEW in equipment

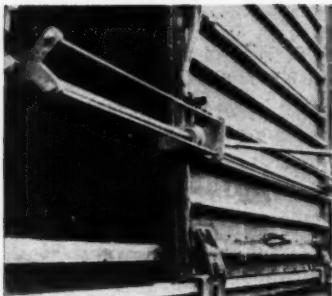
For more information on these products, use the postcard bound into this issue.



Platform Truck with 80 Cu. Ft. Hopper—*Yale & Towne Mfg. Co.*

Bulky loads of loose material like sand, gravel, aggregate, sawdust, waste metal chips, ashes, and scrap, are said to be handled easily with this 4000 lb. capacity high-lift platform truck. It is equipped with an 80-cu. ft. end-dump hopper, which can be tilted downward to scoop up loads, or it can be loaded from overhead. The truck is a standard 4000 lb. electric high-lift platform truck with a specially shortened platform to accommodate the hopper. It's made by Yale & Towne Mfg. Co., Philadelphia Division.

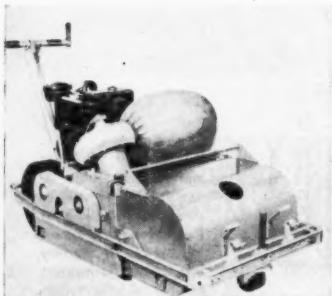
Circle No. 155 on Reader Service Card for more information



Car Door Opener—*Penco Engineering Co.*

The Penco E-Z Way car door opener was designed to open and close freight car doors quickly and easily. It is a mechanical device made of high-strength alloy steel with a built-in lift and holding cam. This device is said to smoothly and powerfully exert a 4,000 lb. direct and constant pressure by a jack-action stroke in the direct line with the opening and closing channel of all types of freight box car doors. It is claimed that the pressure is smooth and will not jerk the door off its runners. Weight of the unit is 34 lb.

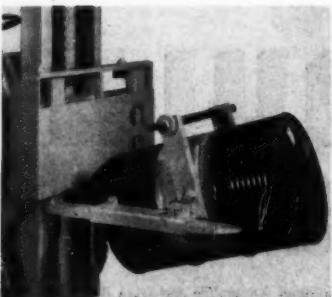
Circle No. 156 on Reader Service Card for more information



Powered Floor Sweeper—*Moto-Mower Co.*

Dual brushes arranged in tandem and operating in opposite directions, and vacuum dust control are features cited for the commander Moto-Sweeper by The Moto-Mower Co., Moto Sweeper Div. The front brush operates in a clockwise direction, throwing debris upward into the path of the rear brush which, operating in a counter-clockwise direction, deposits it in the hopper. This is said to insure that none of the refuse will be thrown forward and underneath. Designed to pick up dirt, nails and all refuse.

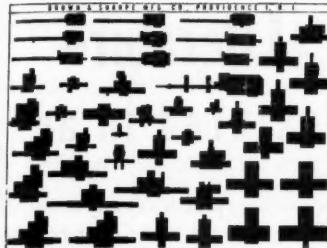
Circle No. 157 on Reader Service Card for more information



Drum Up-End—*Baker Raulang Co.*

Here's a hydraulic drum up-end attachment which permits fork truck operators to pick up, transport, stack and empty heavy drums without leaving their seat, reports Baker-Raulang Co., Baker Industrial Truck Div. Drums can be rotated 90 degrees for vertical or horizontal stacking, or tilted 45 degrees below horizontal for emptying at any height within the lift range of the truck. De-mounting the unit is simple, requiring the removal of two lock pins, unsnapping one hydraulic hose coupling and sliding the up-end off the forks.

Circle No. 158 on Reader Service Card for more information



Master Planning File—*Repro-Templlets Inc.*

Repro-Templlets Inc. has announced the publication of an alphabetically indexed master planning file for plant engineers. The file consists of 5000 $\frac{1}{4}$ in. - scale templets. It is produced on 12" x 18" film sheets, and contains $\frac{1}{4}$ in.-scale templets of the most used machine tools and shop equipment manufactured by some 160 manufacturers, according to Repro-Templlets, Inc. The templets are said to permit reproducing by any commercial method, any quantity of individual templets or groups of templets.

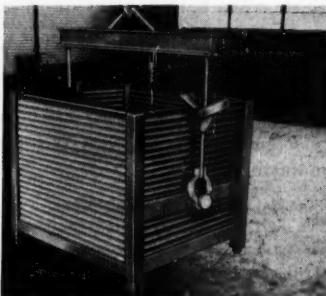
Circle No. 159 on Reader Service Card for more information



Overhead Guard—*Mercury Mfg. Co.*

The Mercury Mfg. Co. has announced the availability of an overhead guard for installation on both the Yak and Yank lift trucks which are made by that company. The new canopy has an overall installed height of 95 in., and when necessary, this height may be reduced to 91 in. The guard is pivotally attached to the lifting mast and also pivotally supported from truck dash. This method of securing is said to permit the guard to remain horizontal, regardless of the degree of lifting-mast tilt.

Circle No. 160 on Reader Service Card for more information



Easy Dumping Portable Scrap Box—*Equipment Mfg. Co.*

A portable scrap box recently developed by Equipment Mfg. Inc., is said to incorporate several features that simplify movement of scrap within the plant. The unit consists of a corrugated steel box and yoke for handling by crane or hoist. Standard size box is 36" x 42" x 30" deep with a capacity of 32 cu. ft. Other sizes are available on order. Construction is of heavy corrugated steel with welded square steel tube frame. Casters may be specified to facilitate mobility around machines.

Circle No. 161 on Reader Service Card for more information



Floor Resurfacer—*The Camp Co., Inc.*

A floor resurfacer said to be tougher than steel, non-slip, and easy to apply has been introduced by the Camp Co., Inc. It is claimed that a $\frac{1}{4}$ in. thickness is sufficient for resurfacing worn out or rough concrete floors to withstand any traffic. The resurfacer sets in about three or four hours, is ready for heavy trucking in 24 to 48 hrs., depending on the temperature and drying conditions. If subject to only foot traffic, the surface will be ready in 24 hrs., according to the manufacturer.

Circle No. 162 on Reader Service Card for more information

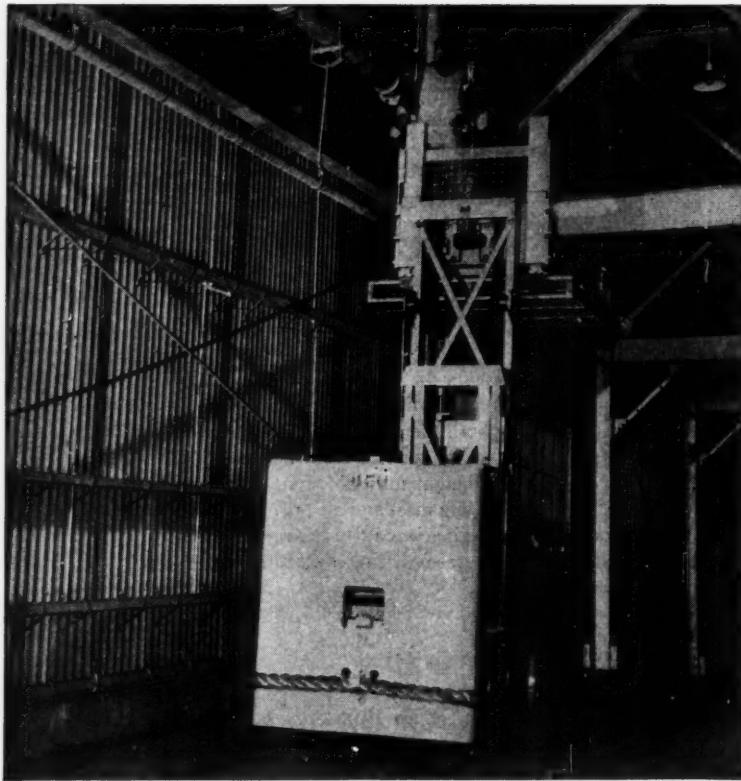


Mobile Utilities Rack—*Palmer-Shile Co.*

This utilities rack was designed for handling parts or small items in course of production or assembly. It can be used at machines and also for conveying materials from place to place, according to the manufacturer, Palmer-Shile Co. Of all steel, welded construction, it has four casters, two of which are swivel, and two rigid. Standard dimensions: 24 in. wide, 50 in. high, 48 in. long, overall. Clearance between shelves is 12 in. Weight is approximately 220 lb.

Circle No. 163 on Reader Service Card for more information

Turn to page 135



Material Handling plus Maintenance

This industrial truck, regularly employed for handling material in unit loads of 2000 to 4000 pounds, serves also to save time on many kinds of plant-maintenance jobs.

It is powered by a 28-cell D8 EDISON Nickel-Iron-Alkaline Storage Battery assembled in a demountable steel box, rated capacity 20.16 kwhr, which has been found ample for full-shift truck operation. Exchanging batteries at the end of one shift, gives the truck operating power for the next shift.

The battery is charged from current produced wholesale by a central station—the lowest cost power obtainable. In combination with a high-torque electric motor, it gives the truck an instant flow of power for starting and acceleration, yet is instantly and completely off during the many momentary pauses between the forward,

back, up, down, and tilting motions of the truck while engaged in picking up, carrying, tiering and setting down loads.

The electric-motor drive is just as dependable and trouble-free as in stationary-machine drives. The battery, its cells made of steel, its alkaline electrolyte a preservative of steel, its principle of operation foolproof, is the longest-lived, most trouble-free of all types of storage batteries. Send for our bulletin *Modern Material Handling* for more information on the advantages of the unit-load method of handling material, the power requirements of industrial trucks and the characteristics of EDISON batteries. Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, N. J. Thomas A. Edison of Canada, Limited, Montreal.



YOU CAN ALWAYS RELY ON
EDISON
Nickel • Iron • Alkaline
STORAGE BATTERIES

Circle No. 36 on Reader Service Card for more information

40

Literature featured in ads

For handling practically any materials—from aggregates to asparagus—Thermoid Company says they have the right conveyor belt for your job. You can get a copy of the Thermoid Conveyor Belting Catalog.

Circle No. 4 on Reader Service Card

It costs real money when a truck goes out of service because of battery failure. Let Gould-National Batteries, Inc., tell you how the Gould Plus-Performance Plan is making money for hundreds of industrial firms by helping them keep their batteries new, longer.

Circle No. 35 on Reader Service Card

Let The Monarch Rubber Company tell you about Monarch Mono-Cushions. These industrial cushion tires stop the high cost of bumps and go farther for low ton-mile cost, says the manufacturer.

Circle No. 16 on Reader Service Card

A bulletin from Samuel Olson Mfg. Co., Inc. describes this company's pallet dollies that steer easy. They turn like a two-wheel cart and give complete mobility to pallets in factories, warehouses, shipping and receiving departments, etc.

Circle No. 119 on Reader Service Card

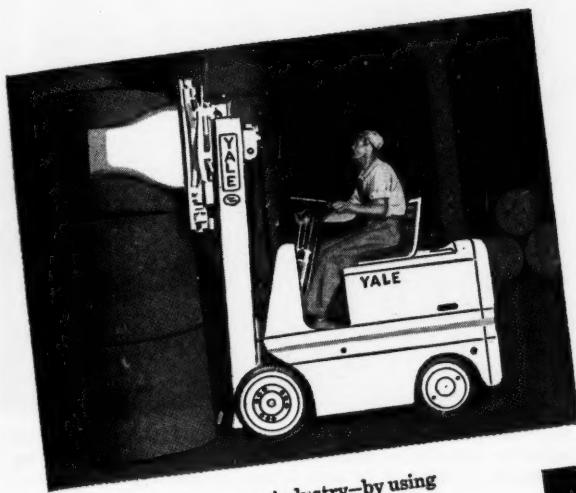
Food Machinery and Chemical Corporation will send you information on its accordion gravity conveyor which makes box handling easy. It extends, contracts, bends and raises or lowers to meet your needs.

Circle No. 101 on Reader Service Card

The latest catalog from Truck-Man Div. of The Knickerbocker Co. describes four models of this company's industrial trucks. Included are: 3500 lb. Skid Lift, 3000 lb. Pallet Toter, 2000 lb. Platform Utility and 13,000 lb. Tractor.

Circle No. 59 on Reader Service Card

Isn't it time Your business enjoyed these savings, too?



↑ **SAVINGS** to the paper industry—by using YALE Gas Trucks to handle bulky paper rolls, users are able to free more of their manpower for productive assignments.

↑ **SAVINGS** to stevedore operations—YALE Gas Trucks' extra powerful, cooler-running engine adds more continuous performance to their fast, high, safe lifting ability.

Exclusive YALE Gas Truck Features Cut Materials Handling Costs... and Maintenance Costs, too

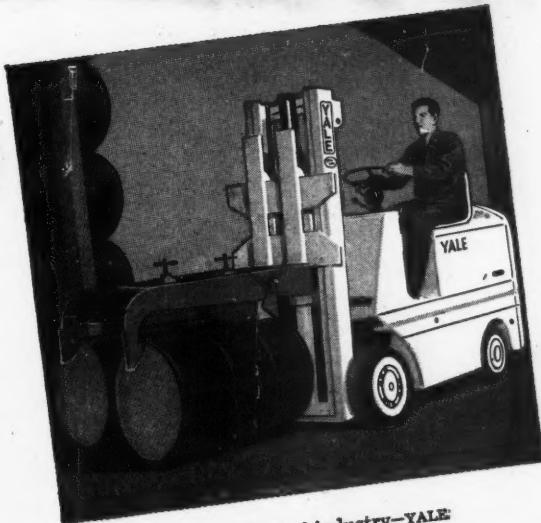
- Time lost in bringing YALE Gas Truck Savings to your business is *money* lost. For YALE Gas Trucks can cut up to 75% off your materials handling costs... save even more in reduced maintenance costs and production stoppages.

Find out now how YALE Gas Trucks' exclusive features reduce your bills for breakdown and wear in transmission, drive, steering assembly—every working part of the truck. Call your YALE Representative—or mail the coupon today.

YALE is a registered trade mark of The Yale & Towne Manufacturing Co.

YALE GAS AND ELECTRIC INDUSTRIAL TRUCKS • YALE WORKSAVERS • YALE HAND TRUCKS • YALE HAND AND ELECTRIC HOISTS • YALE PUL-LIFTS

Circle No. 37 on Reader Service Card for more information



↑ **SAVINGS** to the chemical industry—YALE Gas Trucks move drums and carboys gently, smoothly, safely. They speed handling, reduce breakage, prevent accidents.



YALE & TOWNE MAIL THIS COUPON TODAY

The Yale & Towne Mfg. Co., Dept. 46A

Roosevelt Blvd. & Haldeman Ave., Philadelphia 15, Pa.

How can YALE Industrial Gas Trucks do more—save more—for me?

Please have your local representative call

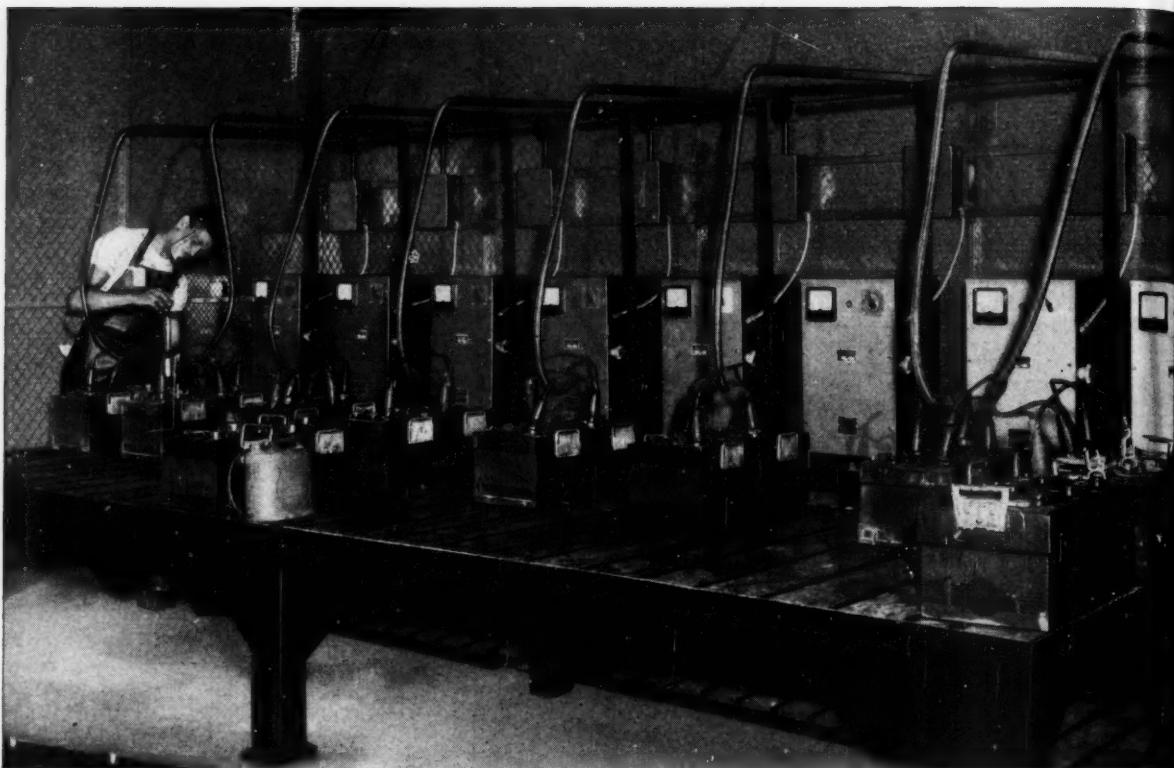
Please send free detailed literature

Company _____

Name _____ Title _____

Street _____ City _____ State _____

In Canada write: The Yale & Towne Manufacturing Co., St. Catharines, Ont.



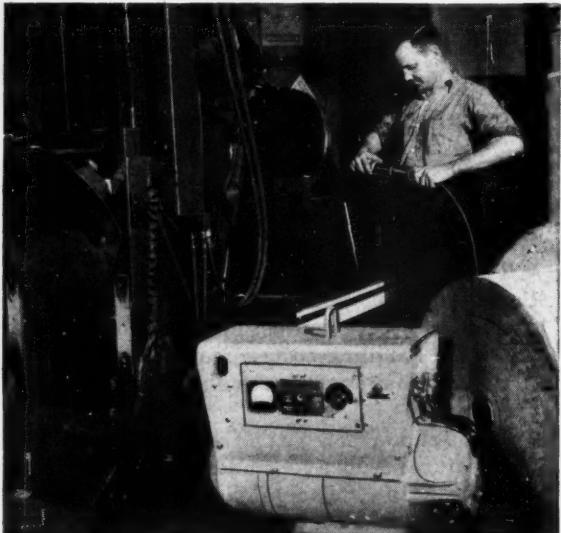
LARGE INSTALLATION of metallic-rectifier chargers provides a flexible power supply which is economical regardless of charging load. Grouping permits central record keeping and supervision.

Since no special foundation is required, individual units may be added or removed or entire station relocated to meet changing needs. Each unit can be used to charge a variety of batteries.

Eliminate guesswork in b

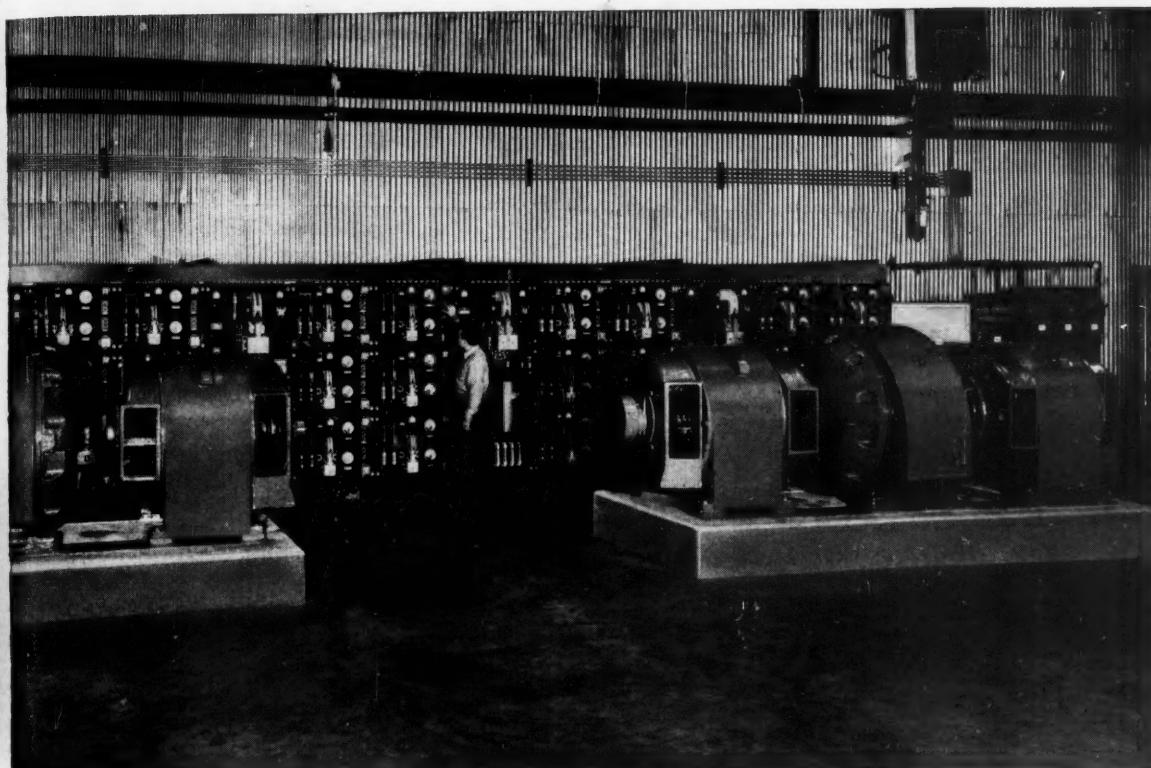


FOR SMALLER OPERATIONS, and to save time by spotting chargers throughout large plants, individual metallic-rectifier chargers are ideal. Automatic controls assure proper charging, and only maintenance required is occasional dusting.



SIMPLE TO OPERATE, portable and compact, describe new G-E single-circuit, universal-type chargers. A few adjustments permit charging many sizes of nickel-alkaline and lead-acid batteries. Protection and automatic control are built in.

Circle No. 38 on Reader Service Card for more information



FOR LARGE FLEET OPERATORS, multiple-circuit charging equipment like this is tailored to exact needs. This installation is designed to charge 24 sets of 30-cell, 1500-amp-hr bat-

teries. To save space, only the control panel need be located in the charging area. For some large plants it is desirable to locate several smaller rotating chargers throughout the plant.

battery-charger selection

Builders of battery chargers for every use, G.E. helps you with impartial advice on the best types for your needs

No one battery charger is right for every job. That's why General Electric builds a *complete line* of rotating and rectifier units. And because we do, you can rely on the recommendations of your G-E representative or equipment supplier as sound and impartial.

This application help is based on a thorough study of your particular requirements. Here are three important ways you benefit: (1) you get equipment that will do the job dependably and economically, (2) you are assured of not buying more elaborate equipment

than you need, and (3) you receive advice and suggestions for making the most efficient use of the battery-charging equipment selected.

Whether you operate a few electric trucks or a large fleet, your G-E representative or equipment supplier offers you the most for your charger dollar: a complete selection of top quality equipment plus sound application advice based on years of experience. Be sure to contact him when making plans for new charging equipment. General Electric Co., Schenectady 5, N. Y. 664

ENGINEERED ELECTRICAL SYSTEMS FOR MATERIALS HANDLING

Conveyor drives • Crane drives • Hoist drives • Industrial truck drives and battery chargers

GENERAL ELECTRIC



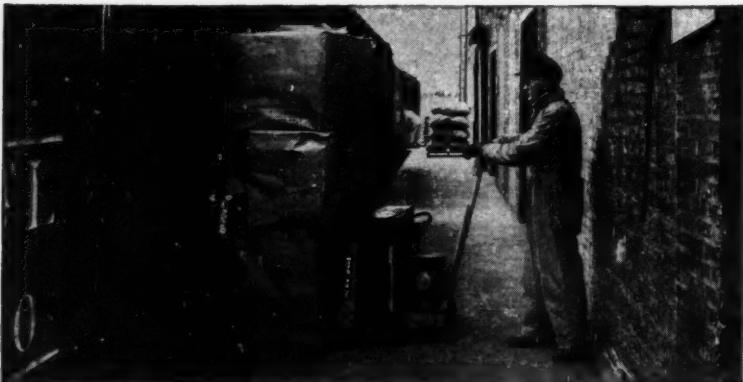
Circle No. 38 on Reader Service Card for more information

Save 68%

OF DOCK HANDLING TIME*

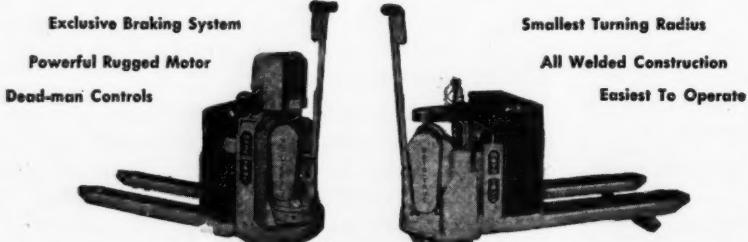
with MOTO-TRUCS

* "A U. S. Navy Materials Handling Laboratory estimates that mechanized handling can cut 68% of the man hours needed for loading freight cars."



A "twist of the wrist" does it.

One user of 8 Moto-Truc Walkies, reduced the man hours unloading a boxcar from 16 to 4. Viz:—One man with a Moto-Truc Pallet now does in 4 hours what formerly took 2 men 8 hours with former methods.



MOTO-TRUC'S 6 BASIC MODELS ARE QUICKLY ADAPTABLE TO ANY PROBLEM IN THE WALKIE FIELD.

DON'T BE SATISFIED WITH LESS THAN THE BEST.

THE MOTO-TRUC CO.

SEND FOR
Bul. No. 51

1953 E. 59th STREET • CLEVELAND 3, OHIO
PALLET, PLATFORM AND HI-LIFT TRUCKS
LARGEST EXCLUSIVE MANUFACTURER OF "WALKIES"



Circle No. 39 on Reader Service Card for more information

Complete details are available from Getman Brothers Manufacturing Division on its Scoot-Crete, bulk material and load unit handler. Models are available with 14-cubic-ft., 16-cubic-ft. and 20-cubic-ft. capacity.

Circle No. 114 on Reader Service Card

Add the "Whippet" Marker to your conveyor line, says The Industrial Marking Equipment Company. Its catalog describes machines to print corrugated cartons and multiwall bags that are filled or flat.

Circle No. 93 on Reader Service Card

Bulletin 49-G from Nutting Truck and Caster Company describes 1000 standard and special trucks which are designed for efficient material handling in all plants. With a Nutting-planned layout, says the company, you can count on a smooth flow of plant traffic.

Circle No. 141 on Reader Service Card

Marvel Industries, Inc., will send details on its Lift-O-Matic power truck attachment for drum handling. It fits any truck, is simple to attach or remove, and the raising or lowering truck lift cylinder provides automatic pick-up and release.

Circle No. 99 on Reader Service Card

You can have portable pulling power on the spot, says St. Anthony Machine Products Co., with its Stampco Tugger. This hoist's motor delivers power to the drum through a series of precision gears running in a continuous bath of oil.

Circle No. 108 on Reader Service Card

The complete story of TransiTube economies and flexibility is told in a bulletin from The Grover Company. These carriers deliver everything from general paperwork to small parts, and deliveries are continuous.

Circle No. 30 on Reader Service Card

Information from The Thew Shovel Co. tells you how their Lorain cranes are getting in the scrap to feed the mills and help ease the steel shortage. Thew Shovel says you can keep one of their cranes busy every hour of the day—lifting, loading, unloading, handling every size, shape and type material.

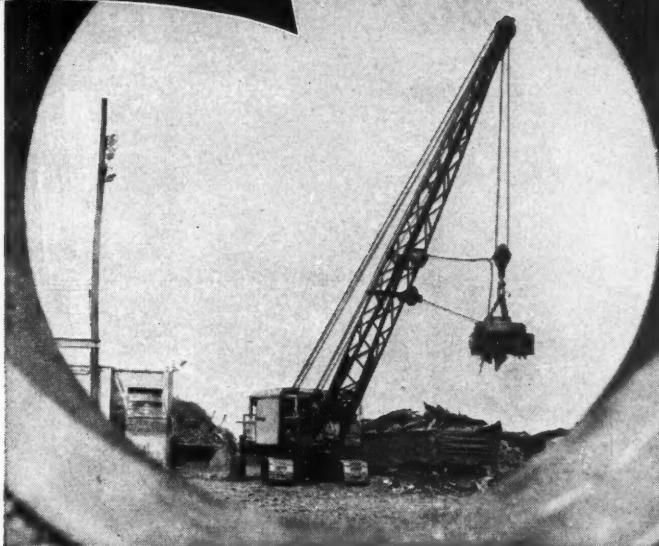
Circle No. 40 on Reader Service Card

GET IN THE SCRAP

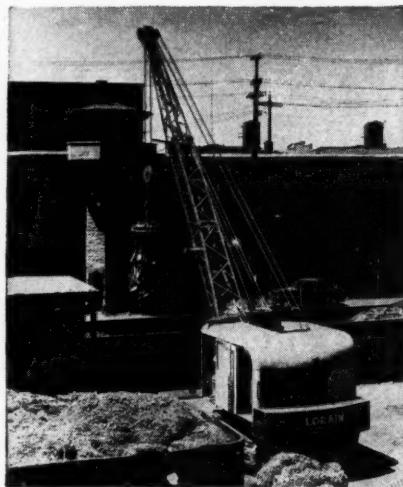
Lorains speed scrap handling for industry—cut material handling costs!

If you have wondered how Lorain Crane power can pay its way at your plant, take a look at these 3 Lorains. They are shown getting in the scrap—fast—to feed the mills and help ease the steel shortage for these three companies. But that's only one of the many chores Lorains perform for industry. You'll keep a Lorain busy every hour of the day—lifting, loading, unloading, handling every size, shape and type material from sand—to scrap—to steel. Your cost-per-material-handling-job will be far less than hand labor methods, and you'll feed factory lines on schedule. Let your local Theew-Lorain Distributor point out the many advantages of a Lorain in your plant!

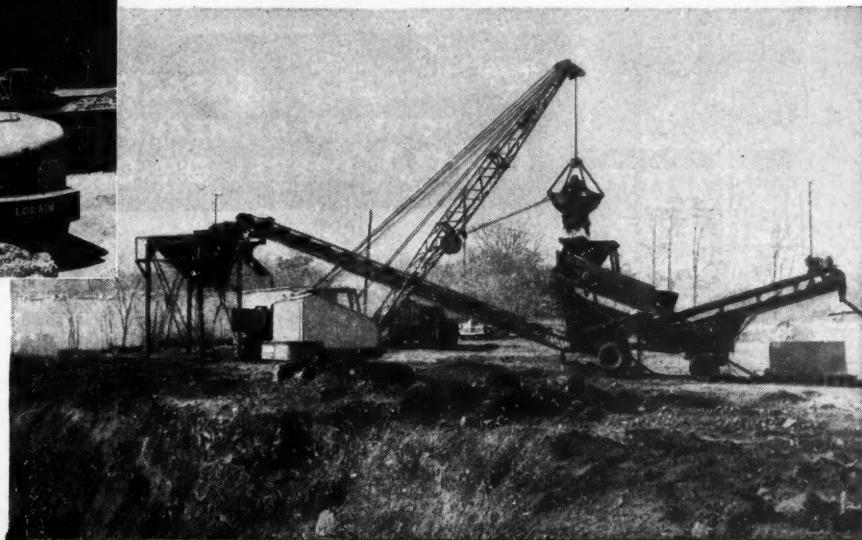
THE THEW SHOVEL CO., LORAIN, OHIO



ABOVE: Pittsburgh Ferrous Products Co., Glassport, Penna. uses a big Lorain-820 Crane with magnet to load scrap steel into gondola cars. Lorain offers a wide selection of crane lifting capacities—from 6 to 45 tons.



LEFT: Columbus Bolt Forging Co., Columbus, Ohio load out steel turnings with their Lorain 50-I magnet-equipped crane. More than 16 various types of attachments are available to handle hundreds of types of material.



RIGHT: Michigan Foundry & Supply Co., Muskegon, Michigan work their Lorain TL25-K as a clamshell to "mine" precious scrap from an old slag dump. Lorains are available on crawler or rubber-tire mountings for any travel condition.

THEW LORAIN ® **CRANES FOR INDUSTRY**

Circle No. 40 on Reader Service Card for more information

*Do more jobs
faster...*



*...Safer with
**BUDA FORK
TRUCKS**
and attachments*



**14 MODELS...CAPACITIES TO 7,500 LBS.
POWERED BY HEAVY-DUTY INDUSTRIAL
BUDA DIESEL OR GASOLINE ENGINES**

Never before have you been able to get more handling efficiency, lower operating costs, less maintenance, greater safety, and long useful life than are now offered you by the Buda FT Series fork lift trucks. Completely new—from their special section mast down to the reinforced "U" channel frame, Buda "FT" Series embody the most advanced engineering, functional design and modern styling. Powered by heavy-duty industrial Buda Diesel or gasoline engines.

Equipped with a wide variety of attachments to save time and cut costs on many special handling jobs, Buda "FT" Series Fork Trucks may very well be the answer to your material handling problems.

Don't overlook the additional advantages of Buda Diesel power as explained in Bulletin 1570. Write for it today. See your nearby Buda Distributor for complete details and demonstration. The Buda Company, Harvey, Illinois.

8H-41

The Line with All 3 for Diversified Handling

TOWING TRACTORS



CHORE BOYS



FORK TRUCKS

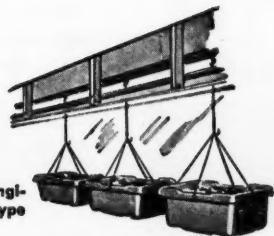


Manufacturers of Material Handling Equipment, Lifting Jacks, Maintenance of Way Products, Earth Drills and Diesel and Gasoline Engines

Circle No. 41 on Reader Service Card for more information

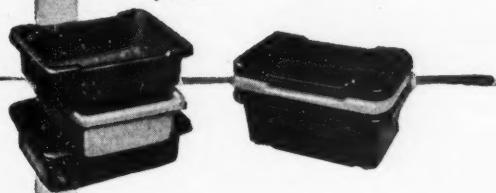
SAVE TIME...

U. S. Royalite tote boxes are engineered for use on almost any type of conveying equipment.



SAVE SPACE...

U. S. Royalite tote boxes nest or stack . . . automatically lock in stacked position.



SAVE CONFUSION...

U. S. Royalite tote boxes are life-time colored for easy departmental segregation and identification.



Save Money with U. S. Royalite Tote Boxes!

Impervious to factory damage hazards, tote boxes made of U. S. Royalite save you money all around!

Tough, lightweight U. S. Royalite is waterproof, stainproof, not affected by oils, alkalies, most acids. Tote boxes made of this durable plastic are of *one-piece design* without rods, rivets, or seams. No metal parts to break, rust or corrode.

Speed up production line operations . . . cut manual handling time with U. S. Royalite tote boxes. Available *now* in a wide range of widths, depths and colors.

CHECK LIST OF ADVANTAGES OF U. S. ROYALITE TOTE BOXES

- ✓ Available immediately in any size
- ✓ Tough—will last indefinitely
- ✓ Lightweight
- ✓ Highly resistant to impact, non-splintering
- ✓ Not affected by oils, alkalies, most acids
- ✓ Color-permeated throughout for easy departmental segregation
- ✓ Will stack or nest
- ✓ Adaptable to any type conveying system
- ✓ Non-warping, non-corrosive
- ✓ Waterproof, stainproof, non-magnetic

U.S. ROYALITE

PLASTIC & RUBBER PRODUCTS

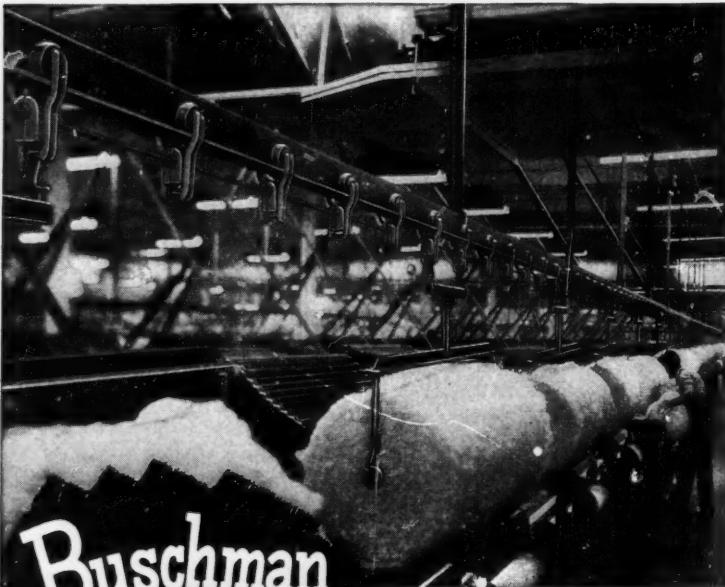


UNITED STATES RUBBER COMPANY

2638 North Pulaski Road, Chicago 39, Illinois

Circle No. 42 on Reader Service Card for more information

KENDALL MILLS... solves tough handling problem



Buschman
CABLE
CONVEYORS

speed
cotton mill's
doubled
capacity

Three Buschman "Universal" Cable Conveyors carry in-process cotton from one department to another in Oakland Plant of Kendall Mills, supplier to Bauer and Black, maker of famous Curity surgical gauze dressings.

Buschman Cable Conveyors, over 2400 ft. in length, smoothly handle high production of this enlarged modern mill. Standard stock units, ease of installation, lower initial cost, lower maintenance cost, small power requirements, time saving and floor-space saving features are reasons why "Universal" is in greater demand than ever, for handling light and medium weight loads.

Write for Bulletin 41.



PRODUCE MORE...FOR LESS
on
Buschman
Conveyors

THE E. W. BUSCHMAN CO., INC.
4450 Clifton Avenue
Cincinnati 32, Ohio

Circle No. 43 on Reader Service Card for more information

Palmer-Shile Co. offers a catalog which describes its many types of material handling equipment. Included is the P-S stacking rack which is easy to move by lift truck or overhead crane. It's built to specifications.

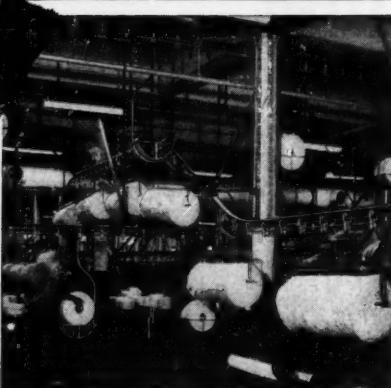
Circle No. 87 on Reader Service Card

Shift your load to Dico, says Dico Company. The catalog offered by this company gives full information on the steel hand trucks best suited to fit particular trucking problems.

Circle No. 62 on Reader Service Card

Let Aerol Co., Inc., show you how smart, "pound-wise" buyers are setting new records in reduced maintenance costs with Aerol's quality-plus equipment. Their wheels have positive pressure sealed hubs which prevent foreign matter from attacking and destroying vital bearings.

Circle No. 97 on Reader Service Card



Information from The Camp Company, Inc., will show you how your floor problems can be solved with this company's tailor-made floors for all requirements, including heavy-duty, fire-proof, spark-proof, oil and grease-proof, acid-resistant and others.

Circle No. 134 on Reader Service Card

Silent Hoist & Crane Co. offers bulletins describing its combination boom crane with separate power winch and fork lift. These units feature fast handling of unbalanced and capacity loads with maximum stability, high lifting range and short turns in narrow aisles.

Circle No. 147 on Reader Service Card

Informative folder and specifications sheet from Michigan Crane & Conveyor Co. describes this company's cranes. Features include anti-friction bearings at all moving points on bridge and trolley, and fluid drive.

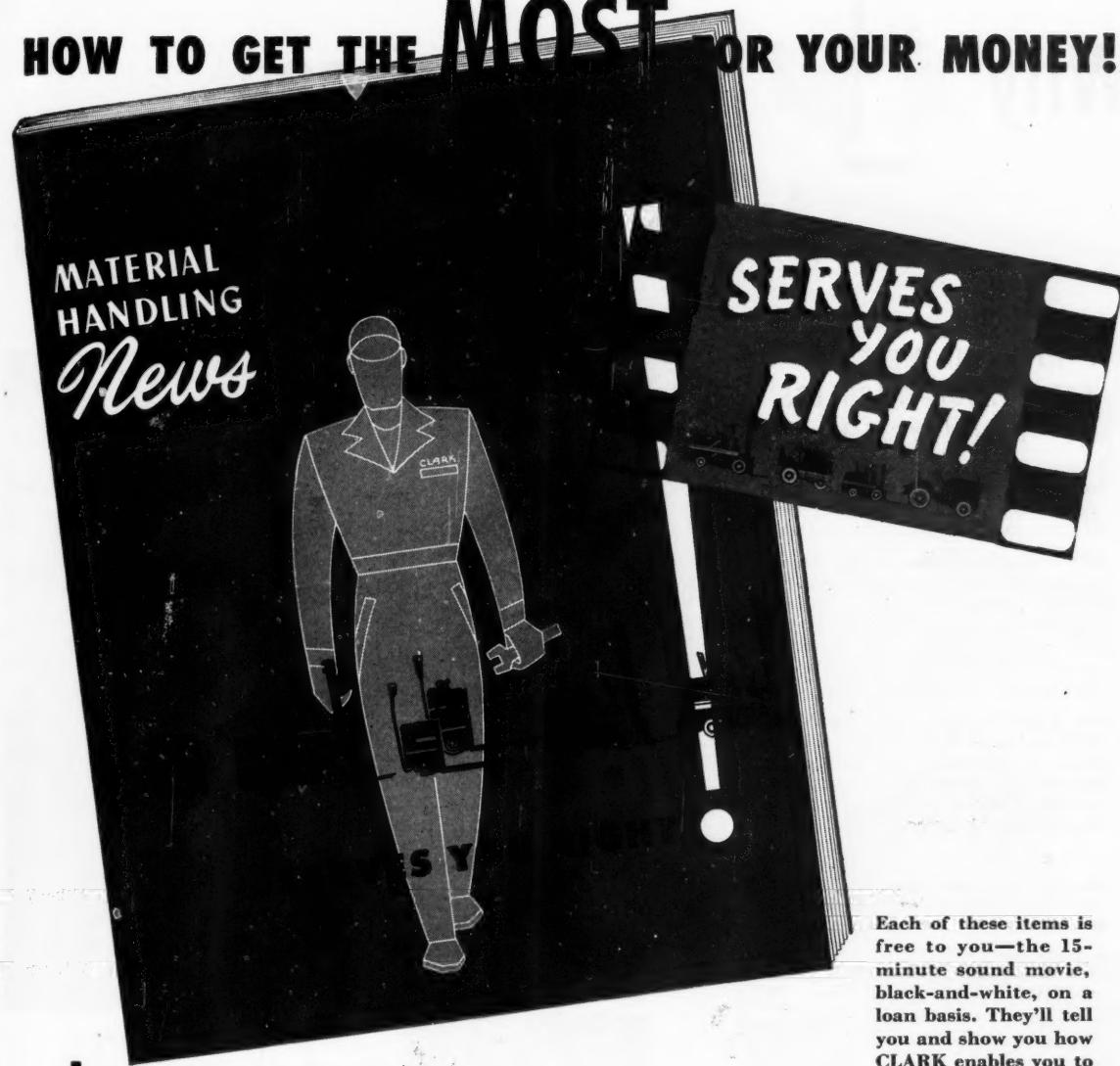
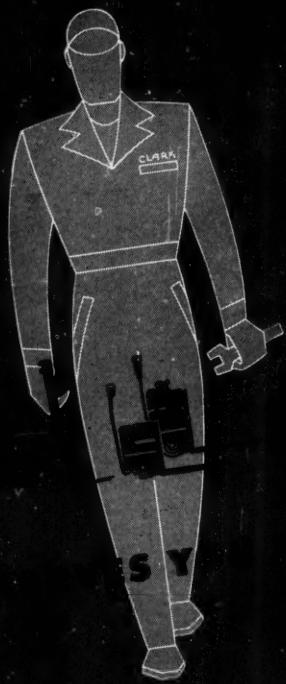
Circle No. 18 on Reader Service Card

Custom protection prevents shipping damage as no other packaging method known, says Kimberly-Clark Corporation. Complete information describes Kimpak, which is soft, grit-free, easy to apply and will absorb up to 16 times its own weight in moisture within 30 seconds.

Circle No. 90 on Reader Service Card

HOW TO GET THE MOST FOR YOUR MONEY!

MATERIAL
HANDLING
News



JUST MECHANIZE your materials handling operations by using CLARK EQUIPMENT. It's as simple as that.

• That's what they all say? Perhaps. But CLARK backs up its claim with facts and unmatched performance.

On the questions of . . .

- ✓ Quality, Longevity ✓ Savings Achieved
- ✓ Customer Satisfaction
- ✓ Number of Trucks in Use
- ✓ Efficiency and Performance
- ✓ Economy of Operation and Maintenance
- ✓ Factory and On-The-Ground Service

... there is at hand—and available to you—overwhelming evidence that CLARK Serves You Right!

The whys and wherefores are available to you in two new media—the "SERVES YOU RIGHT" edition of our Material Handling News, and our new movie on the use of fork-lift trucks and industrial towing tractors in Plant Maintenance Work.

Each of these items is free to you—the 15-minute sound movie, black-and-white, on a loan basis. They'll tell you and show you how CLARK enables you to get the MOST for your money. Just fill out the coupon, attach to your business letterhead and place in your "out-going" mail basket.

CLARK ELECTRIC AND GAS POWERED
FORK TRUCKS
AND POWERED HAND TRUCKS • INDUSTRIAL TOWING TRACTORS

Four small illustrations of industrial trucks: a hand truck, a forklift, a tow tractor, and a truck. They are arranged in a row, each with a small circle next to it.

INDUSTRIAL TRUCK DIVISION • CLARK EQUIPMENT COMPANY • BATTLE CREEK 13, MICHIGAN
Please send: Material Handling News Movie "Serves You Right"
 Have Representative Call.

Name _____

Firm Name _____

Address _____

City _____ Zone _____ State _____

AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

Circle No. 44 on Reader Service Card for more information

Why 1 when you can transport 4

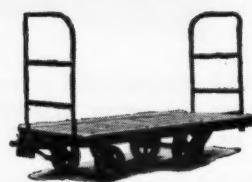
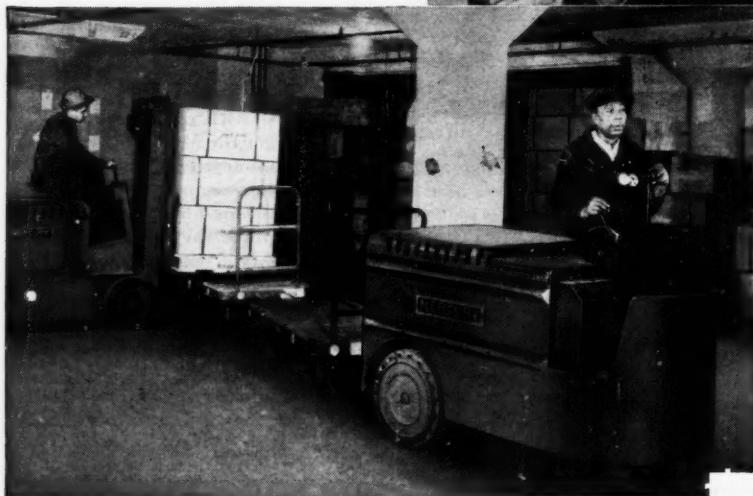
WITH THE MERCURY FORK TRUCK-TRACKLESS TRAIN SYSTEM

If your fork trucks travel over 150 feet (maximum)—you can save time...money...man power with the fork truck—"trackless train system."

In the system *trailers* do the transporting job—the fork truck loads the trailers... hauls the train... unloads and stacks at destination. And if your volume is large and distances great an electric tractor may be the best bet for the hauling job.

Let a MERCURY sales representative actually demonstrate the increase in efficiency the addition of trailers will make in your handling system. There is no obligation. Use the convenient coupon.

Mercury "Jeep" Fork Truck loads, hauls and unloads A-310 Trailers at grocery warehouse.



Model A-310 Trailer (4000 lb. capacity) with the "Safety-Self-Coupler" for "Trackless-Train-System" operation.

Mercury "Jeep" Fork Truck loads A-310 Trailer train to be hauled by a Mercury "TUG" Electric Tractor.



MERCURY MANUFACTURING CO., 4154 So. Halsted St., Chicago 9, Illinois



MERCURY MANUFACTURING COMPANY
4154 So. Halsted St., Chicago 9, Illinois

Have a representative call.
 Send copy of new 44 page catalog illustrating and describing complete MERCURY line.

Name _____

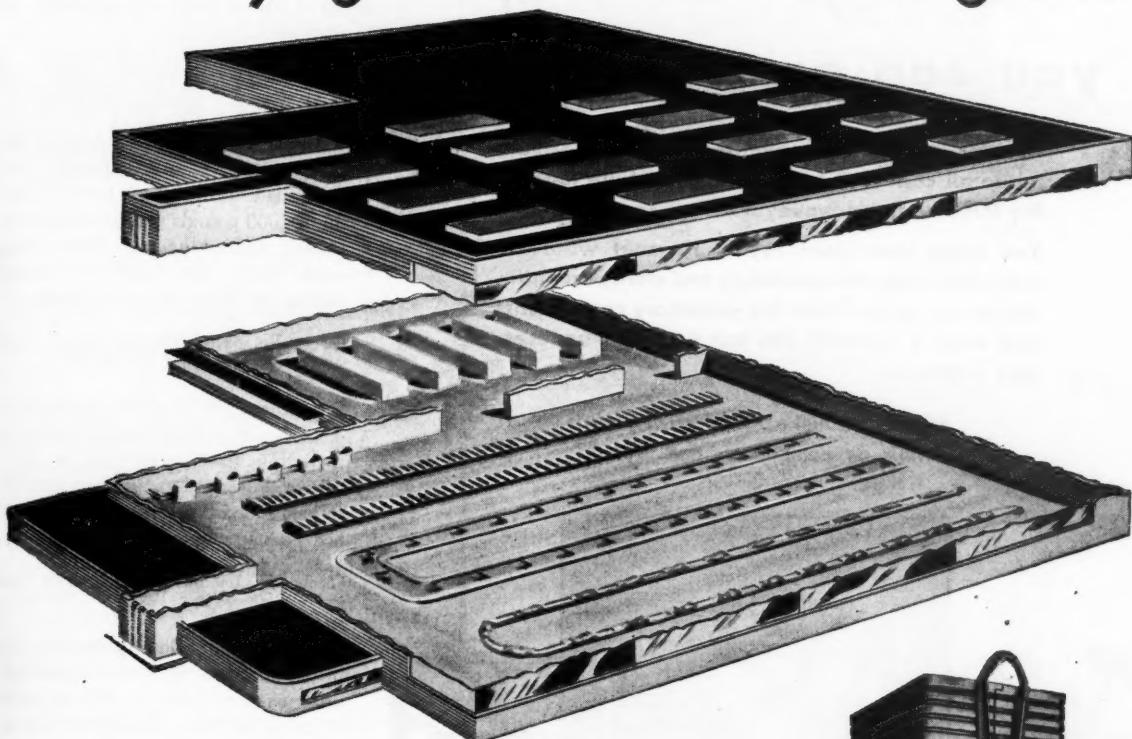
Company _____

Address _____

City _____ Zone _____ State _____

Circle No. 45 on Reader Service Card for more information

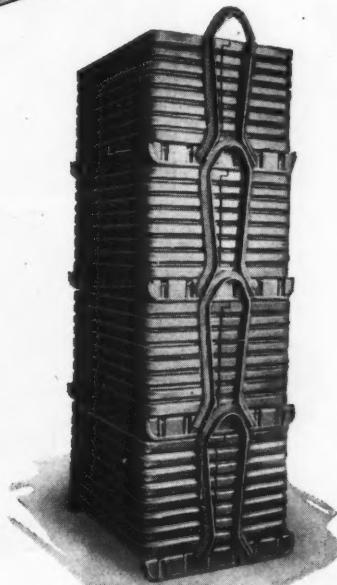
You're Paying For a Whole Building...



Why Not Use It?

Take advantage of the upper half of your building . . . get the extra floor space you need by using your "air rights"—you're paying for it! Powell engineered warehouse and working inventory control methods have saved hundreds of manufacturers thousands of dollars . . . added thousands of sorely needed extra floor space, simply by going up.

Best qualified to help you to get the most out of your space are the Powell representatives. These material handling experts have years of experience and complete lines of nationally accepted products including the famous Powell stacking units. Have a Powell man look over your operation soon if you want lower handling costs or additional floor space. There are Powell representatives in 55 major industrial areas—if one is not near you, write direct for quick action.



The famous Powell
Stacking Units



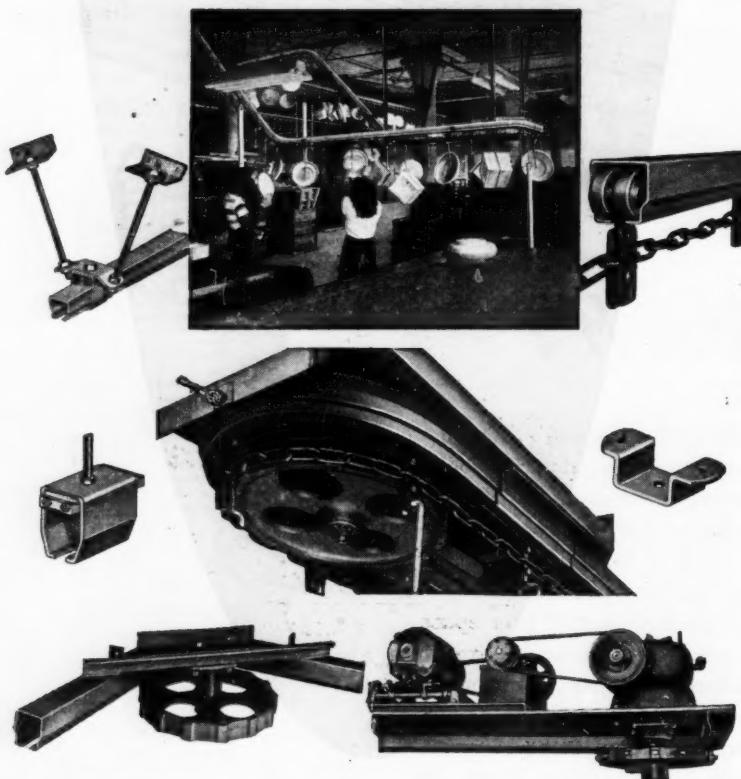
POWELL PRESSED STEEL CO., HUNTERDON, NEW JERSEY
Originators of All Steel Cold Formed Materials Handling Equipment
(In Greater Newark)

A Packaged Conveyor you can erect yourself

Here is a complete overhead, power driven, monorail conveyor for light and medium loads—the MHS Junior Monovveyor.

You make your own layout to meet whatever manufacturing, transportation and storage requirements you have. Order the necessary components and erect it yourself. No lost time—no unnecessary expense.

Write for Bulletin JM-1 for complete details on components and layout.



**Mechanical
Handling**
Systems, Inc.

4620 NANCY AVE. • DETROIT 12, MICH.
Offices in Principal Cities



Circle No. 47 on Reader Service Card for more information

52

Let The Hertner Electric Company tell you about its single circuit, multiple circuit, or custom-built motor-generator or battery charging equipment for driver ride trucks or motorized hand trucks.

Circle No. 139 on Reader Service Card

Get the facts on the hydraulic tailgate manufactured by Hercules Steel Products Corporation. It handles loads up to 2000 pounds and platform locks at any desired height. Twin lifting rams under the platform prevent strains in lifting off-center loads.

Circle No. 69 on Reader Service Card

Literature from The Belt Corporation describes its belt conveyor equipment, including the Versaveyor, a lightweight, low-cost box and bag handler. It has a box-type frame, is made of heat-treated aluminum alloy.

Circle No. 100 on Reader Service Card

Let Automatic Transportation Co. prove how you can cut material handling costs as much as 50% or more by using its "101" Transporters, powered walkies. The company offers a free, 3-day trial.

Circle No. 2 on Reader Service Card

You can save damage, weight and costs with American wirebound crates, says American Box Company. Literature from the company describes its wirebound crates and boxes.

Circle No. 85 on Reader Service Card

Bulletin 1570 from The Buda Company points out the additional advantages of Buda diesel power in this company's fork trucks. The company makes 14 models, with capacities up to 7500 pounds, powered either by diesel or gasoline engines.

Circle No. 41 on Reader Service Card

It's easy to find just the right unit to meet your individual needs in Union Special Machine Company's line of bag closing machines. They're described in Bulletin No. 200, "Union Special Filled Bag Closing Machines."

Circle No. 91 on Reader Service Card

JUNE, 1952 • FLOW

any tell
multiple
genera-
ent for
d hand

ce Card

ic tail-
es Steel
es loads
n locks
lifting
prevent
ds.

e Card

oration
ipment,
light-
andler.
ade of

ce Card

on Co.
al han-
or more
s, pow-
ffers a

ce Card

nd costs
es, says
erature
s wire-

ce Card

a Com-
nal ad-
in this
company
ilities up
ther by

ce Card

unit to
n Union
line of
're de-
"Union
machines."

ce Card

FLOW

WEIGH FASTER . . . MORE ACCURATELY . . . with a BALDWIN SR-4 CRANE SCALE

NO BULKY SCALES!

POSITIVE, ACCURATE MEASUREMENT!

READINGS RIGHT IN CAB!

Overhead weighing need no longer be cumbersome—time consuming—dangerous—inaccurate. By replacing ordinary weighing devices with a Baldwin SR-4® crane load-weighing unit, you can have all the advantages of electrical weighing—the speed—the conveniences—the high accuracy—the freedom from hazards.

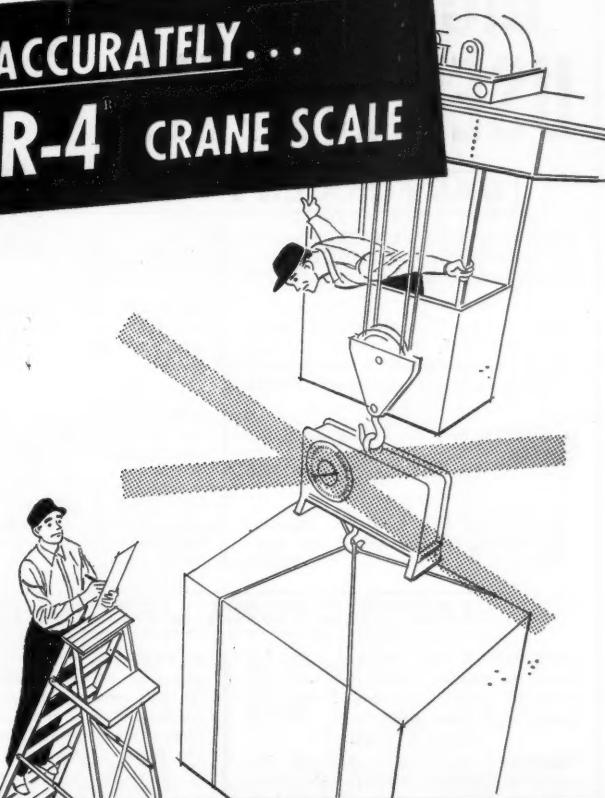
A simple unit, this new electrical weighing device consists of the SR-4® pick-up, the instrument and cable reel, if required.

A portable crane scale easily assembled to your crane hook—the Baldwin SR-4® Load Cell is hermetically sealed, temperature compensated and free from moving parts. This load cell offers a reliability impossible with any mechanical weighing system.

The electrical signal can be transmitted to indicators, recorders, or printers located either in the crane cab or at convenient spots on the plant floor. Or, if you like, control devices can also be incorporated.

Readings are easily made—without danger to employees—without the usual inaccuracies and lost time.

We'd like to send you detailed specifications and prices on this unusual crane weighing unit . . . so why not write? Please outline your requirements if they are special in any way. STANDARD CAPACITIES $2\frac{1}{2}$, 5, $12\frac{1}{2}$ and 25 tons.



BALDWIN - LIMA - HAMILTON TESTING HEADQUARTERS

BALDWIN-LIMA-HAMILTON CORPORATION

Eddystone Division • Philadelphia 42, Pa.

In Canada: Peacock Bros., Ltd., Montreal, Quebec

Circle No. 48 on Reader Service Card for more information

BIG VALUES in USED HANDLING EQUIPMENT

GAS FORK LIFT TRUCKS

CLARK Fork Lift Truck, 6,000 lbs. capacity. Model: Utility Truck, 1950. 83" mast. Rebuilt and guaranteed \$2,750

ROSS Fork Lift Truck, 15,000 lbs. capacity. Model 15HT, 1947. 17' lift, 48" fork. Hydraulic steering, side shifter, pneumatic tires. Rebuilt and guaranteed \$4,650

2 HYSTER Fork Lift Trucks, 7,500 lbs. capacity. Model 75, 1948. 108" lift. Pneumatic tires. Good condition \$2,600

CLARK Yard Lift, 4,000 lbs. capacity. 1947 model. 72" lift. Rebuilt and guaranteed \$2,500



MOBILIFT Fork Truck, 2,000 lbs. capacity. 108" lift. Two-cylinder engine with self-starter; solid tires. Rebuilt and guaranteed \$1,250

ROSS Fork Lift Truck, 6,000 lbs. capacity. Model: 19HT. 168" lift. Pneumatic tires. Rebuilt and guaranteed \$3,500

HYSTER Fork Lift Truck, 4,000 lbs. capacity. Model: 40, 1946. 108" lift, 36" forks. Pneumatic tires. Good condition \$2,000

ELECTRIC FORK LIFT TRUCKS

AUTOMATIC Fork Lift Truck, 4,000 lbs. capacity. Model: THFL. 119" lift, 83" mast, 42" forks. Solid tires. Rebuilt and guaranteed. Less battery \$2,500

MERCURY Fork Lift Truck, 4,000 lbs. capacity. Model: VINNY. 83" mast, 120" lift, 42" forks. Solid tires. Rebuilt and guaranteed. Less battery \$2,000

AUTOMATIC Fork Lift Trucks, 2,000 lbs. capacity. Model: Skylift BF 20. 130" lift, 83" mast, solid rubber tires. 1947 machine. Rebuilt and guaranteed. Complete with one set of Edison batteries and one Motor Generator battery charger. \$3,500

MOBILE CRANES

KRANE KAR 5-ton capacity. Model AX. 12' - 18' telescopic revolving boom. Powered by Buda gas engine. Pneumatic tires. Rebuilt and guaranteed \$5,900

BAKER Crane, 6,000 lbs. capacity. 12' - 18' revolving boom. Solid tires. Can be powered by either batteries or ready power unit. Rebuilt and guaranteed \$4,500
(Batteries furnished on request)

HYSTER KARRY KRANE 5-ton capacity. Non-revolving boom. Powered by Hercules engine. Pneumatic tires. Rebuilt and guaranteed \$3,100

YALE Crane, 3,000 lbs. capacity. Model: K 42-3-7. 12' - 18' revolving boom. Solid rubber tires. Rebuilt and guaranteed. Less battery \$3,500

MISCELLANEOUS

BAKER PLATFORM TRUCK 6,000 lbs. capacity. Model: E3G 55.

4 HYDRO-ELECTRIC HAND LIFT TRUCKS. 4,000 lbs. capacity. Battery driven.

HEBARD TRACTOR Model: J233. Pneumatic tires.

100 WAREHOUSE TRAILERS 48" x 84". Steel wheels.

ALL GUARANTEED EQUIPMENT CARRIES 60-DAY PARTS WARRANTY

All above equipment offered subject to prior sale. Our inventory of fine used equipment is constantly changing. Let us know your needs. If you have equipment for sale, send us your list for immediate consideration.

ALSO, EQUIPMENT RENTED FOR YOUR TEMPORARY NEEDS

L & C MACHINERY CORPORATION
460 TROUTMAN ST., BKLYN., N. Y., HYacinth 7-3331

Circle No. 49 on Reader Service Card for more information

"C-F Lifters" is a bulletin from Cullen-Friestedt Co. illustrating the cost-saving features of this company's grabs. Jaw adjustments for carrying different widths of sheets are made in a few seconds by the operator. They are made in sizes to handle from 2 to 60 tons in standard and semi-special designs.

Circle No. 138 on Reader Service Card

Information from The Ready-Power Co. shows how preventive maintenance eliminates truck downtime. By equipping your fleet with interchangeable Ready-Power gas-electric units, and having one extra for the shop, the units can be rotated and trucks kept on the job.

Circle No. 124 on Reader Service Card

Complete specifications are available from Mobilift Corporation describing their stand-up fork lift trucks. Models include 2000, 2500, 3000 and 3500-pound capacities, with 63", 72" and 83" masts.

Circle No. 11 on Reader Service Card

You can build the exact type of pallet or material handling box you need with the Phillips Erect-A-Pallet, manufactured by Phillips Mine and Mill Supply Company. Information on this versatile unit is available.

Circle No. 55 on Reader Service Card

What's your closure problem? If you ship in corrugated or fibre containers, an International staple machine can close them better, faster and more economically, according to International Staple & Machine Co. You can get detailed information.

Circle No. 88 on Reader Service Card

Hobbs engine hour meters record hours and minutes of lift truck operation, indicating when to lubricate, overhaul, etc. Details are available from John W. Hobbs Corporation.

Circle No. 115 on Reader Service Card

The B. F. Goodrich Co. offers information on their Tire and Wheel Analysis Plan, applicable no matter what your usage of industrial tires. Particular needs are analyzed without charge, and service and maintenance recommendations are made.

Circle No. 29 on Reader Service Card

Cullen
the cost-
company's
carrying
made in
. They
om 2 to
-special

ee Card

-Power
ntenance
y equip-
ngeable
ts, and
op, the
ks kept

ee Card

available
scribing
Models
1 3500-
2" and

ee Card

f of pallet
u need
manu-
d Mill
on this

ee Card

If you
ainers,
ne can
l more
nterna-
ou can

ee Card

record
operations
corporate,
available
ction.

ee Card

for-
analysis
at your
particular
ge, and
nenda-

ee Card

FLOW



INDUSTRIAL Rapid-Wheel* GRAVITY CONVEYOR

Moving tote boxes? Heavy cartons? Palletized parts? With Rapistan's new Industrial Rapid-Wheel you now get roller conveyor capacity at wheel conveyor cost. New strategic arrangement of additional steel center bands gives extra-rigid support for every conveyor wheel . . . extra-deep channel frame (3½") raises capacity to 400 lbs. per foot! You get non-skid "wheel action" on turns plus smoother flow with less pitch, and longer economical gravity runs.

Rapistan's new Industrial Rapid-Wheel is available in 5' or 10' sections . . . 12" or 18" channel widths. It's a real cost-cutter.

*T. M.

For answers to your conveying problems

send today for prices, specifications, and full information on Rapistan's new low-cost Industrial Rapid-Wheel. To meet special needs, modifications like those illustrated are available at mass-production prices. Write today.

The RAPIDS-STANDARD CO., Inc.
688 Rapistan Bldg., Grand Rapids, Michigan



Rapistan®

BETTER CONVEYING EQUIPMENT

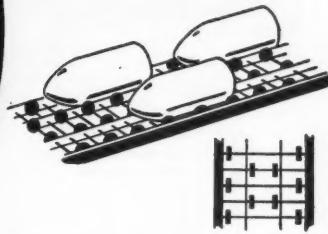
Representatives in Principal Cities

CONVEYORS • INDUSTRIAL CASTERS • WHEEL-EZY® TRUCKS

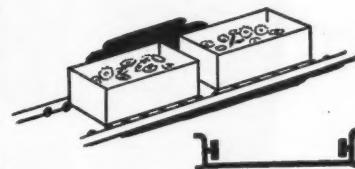
Circle No. 50 on Reader Service Card for more information

some low-cost "special problem" applications

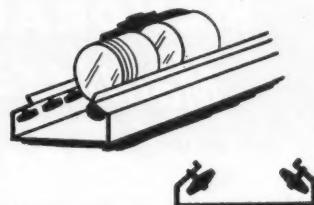
These sketches show how Rapistan wheel conveyors are being used to solve special problems for various manufacturers.



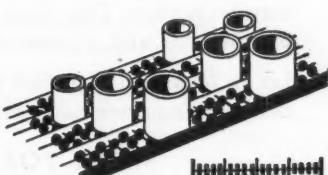
- Special "double lane" arrangement permits two lines of 4.2 mortar shells to move abreast through assembly line.



- Tote boxes with stacking chimes ride smoothly on this economical two-wheel "lane" conveyor.



- Special "trough" arrangement with rubber-faced conveyor wheels gives highly finished pistons a smooth, scratch-free ride.

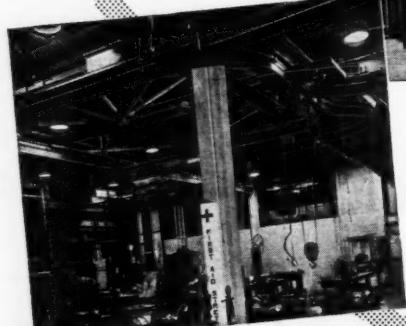


- "Fence Conveyor" with rubber-faced wheels and dividing center bands (fences) permits simultaneous flow of four different grades of pistons to assembly line.

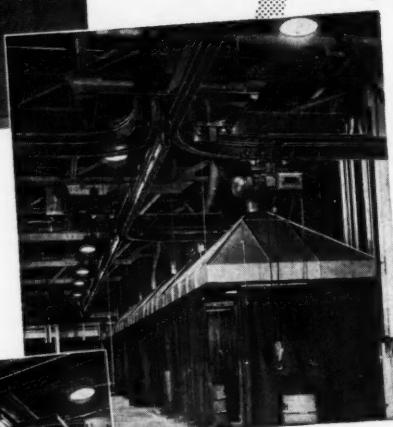


Railmaster 3-ton crane serves the paint shop area and interlocks via track curve with crane serving the sand blast room. Interlocking track is equipped with opener to allow fire door closure.

Track and switches with spur tracks over welding booths for easy spotting of heavy loads in booths.



Compact track and crane system over the electrical shop area. Note hand chain drop section on extreme left, which lowers a hoist carrier for service or repair.



MONORAIL REDUCES *Maintenance Costs*

In this, one of the country's largest maintenance shops, American MonoRail Overhead Handling Equipment serves the entire department. Included in the department are: machine shop, electrical repair, metalizing room, welding, painting and sand blast room, pipe shop, and inside and outside storage. This plant has shown a definite increase in efficiency and a great reduction in handling costs.

Let an American MonoRail engineer show you how you can cut handling costs and save valuable floor space.

WRITE FOR C-1 BULLETIN

THE AMERICAN MONORAIL COMPANY

13129 ATHENS AVENUE

CLEVELAND 7, OHIO

Circle No. 51 on Reader Service Card for more information

56

Let General Electric Co. show you how to eliminate guesswork in battery charger selection. Whether you operate a few electric trucks or a large fleet, you'll find the charger you need in the company's complete line of rotating and rectifier units.

Circle No. 38 on Reader Service Card

"Owners Report" is a booklet from A. B. Farquhar Co. containing case histories of money-saving conveyor installations. No matter what you want to move, or where you want to move it, there's a Farquhar conveyor for the job.

Circle No. 60 on Reader Service Card

Overhead weighing need no longer be cumbersome, time consuming, dangerous or inaccurate, says Baldwin-Lima-Hamilton Corporation, Testing Headquarters. Detailed specifications are available on the Baldwin crane load-weighing unit.

Circle No. 48 on Reader Service Card

For large plants and small ones, the principle of sectional assemblies used in fabricating Baughman conveyors and elevators makes it simple to assemble, move, lengthen or shorten them with great saving in erection costs. Baughman Mfg. Co., Inc., offers complete information.

Circle No. 26 on Reader Service Card

Literature from American Chain & Cable Co., Inc., Wright Hoist Division, tells how to spare the back and speed the load. The Wright Speedway hoist has alloy steel gears, self-lubricating ball and roller bearings, preformed improved plow steel cable, grooved drum, rigid metal weatherproof wire conduits, silver contact controls, and other important features.

Circle No. 33 on Reader Service Card

Bulletin JM-1 from Mechanical Handling Systems, Inc., gives complete details on the components and layout of the MHS Junior Monovveyor. This packaged conveyor is a complete overhead, power driven, monorail conveyor for light and medium loads. It is easily erected.

Circle No. 47 on Reader Service Card

Turn to Page 153

JUNE, 1952 • FLOW

YALE
VAL

FLOW

you
battery
in oper-
large
you need
line of

the Card

from A.
ing case
 conveyor
at you
want to
 conveyor

the Card

ger be
danger-
Lima-
Heads-
ns are
the load-

the Card

es, the
es used
veyors
to as-
horten
rection
, offers

the Card

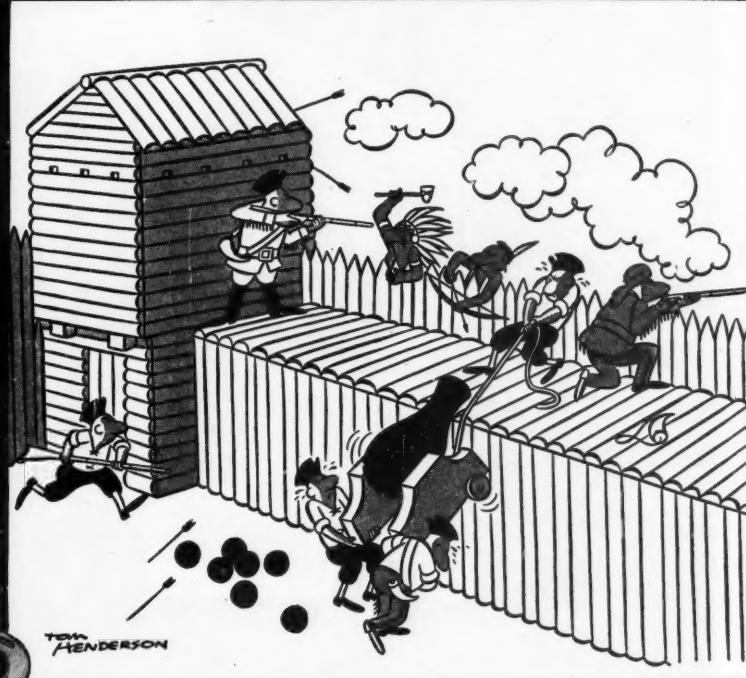
main &
vision,
l speed
y hoist
cating
formed
rooved
of wire
ls, and

the Card

l Hand-
complete
layout
. This
e over-
veyor
s easily

the Card

There's a
YALE
hoist for
every
lifting job!



CAPACITIES:
1/4 to 12 Tons

Eliminate Hoist Downtime

with the YALE Cable King Electric Hoist. *Exclusive* Cable King Positive Load Brake Lubrication minimizes heat created by friction. And the *exclusive* Cable King Cooling System circulates air into all parts of the Braking Mechanism. Result: A Hoist that gives you continuous day-long, top-speed service.

TO TAKE operating costs off the firing line
... bring your lifting problems to your
YALE Distributor. For a YALE Hand or
Electric Hoist can save manpower and in-
crease production on every lifting job.

Your YALE Distributor can give you
valuable help in choosing the right hoist for
your special needs—from the world's most
complete line of hoisting equipment. He will
recommend the modern, dependable YALE
Hoist designed to solve your particular
problems. Look for your local YALE Distrib-
utor in the Classified Directory. Or mail the
coupon below.

YALE & TOWNE

MAIL THIS COUPON TODAY

The Yale & Towne Manufacturing Co., Dept. 46
Roosevelt Boulevard & Haldeman Ave., Philadelphia 15, Pa.

I'm interested in lifting for less with a YALE Hoist.

Please have your local Distributor call on me
 Please send detailed literature on YALE Hand Hoists
 YALE Electric Hoists

Company.....

Name.....Title.....

Street.....

City.....State.....

In Canada write: The Yale & Towne Manufacturing Co., St. Catharines, Ont.

YALE is a Registered Trade Mark of The Yale & Towne Manufacturing Co.

YALE HAND AND ELECTRIC HOISTS • YALE GAS AND ELECTRIC INDUSTRIAL TRUCKS • YALE WORKSAVERS • YALE HAND TRUCKS • YALE PUL-LIFTS

Circle No. 52 on Reader Service Card for more information



Ind
Feat
Mat

Rece
Hand
Hand
Hand
Hand
Hand
Hand
Prob
(s
ha
Clini
Pack
What
Con
Shipp
Carlo

Your trucks can do **More work each day with**

C&D Slyver-Clad® batteries

Trade Mark Reg. U. S. Pat. Off.



OF CONSHOHOCKEN, PA.
(In the Philadelphia Area)

SALES AND SERVICE

Boston, New York, Philadelphia, Syracuse, Buffalo, Pittsburgh, Washington, Atlanta, Jacksonville, New Orleans, Cleveland, Detroit, Chicago, St. Louis, Minneapolis, Dallas, Denver, San Francisco, Los Angeles, Portland, Seattle

Yes, actual user-results confirm C&D's claim that SLYVER-CLAD batteries deliver up to 20% more power, last as much as 35% longer! That means more work per day—every day! A C&D-powered truck works right up to the end of each shift with power to spare—lifts heavy loads and climbs inclines as easily as it did at the shift's beginning. That's real performance!

The secret of these super batteries is in their longer, heavier plates . . . made possible by C&D's *exclusive* Five-Fold SLYVER-CLAD method of plate insulation and retention. To learn more about the inner workings of these power-packed batteries—and how they can help boost production in your plant—send for C&D's SLYVER-CLAD battery folder. It's free; write today!

Circle No. 53 on Reader Service Card for more information

About This Issue

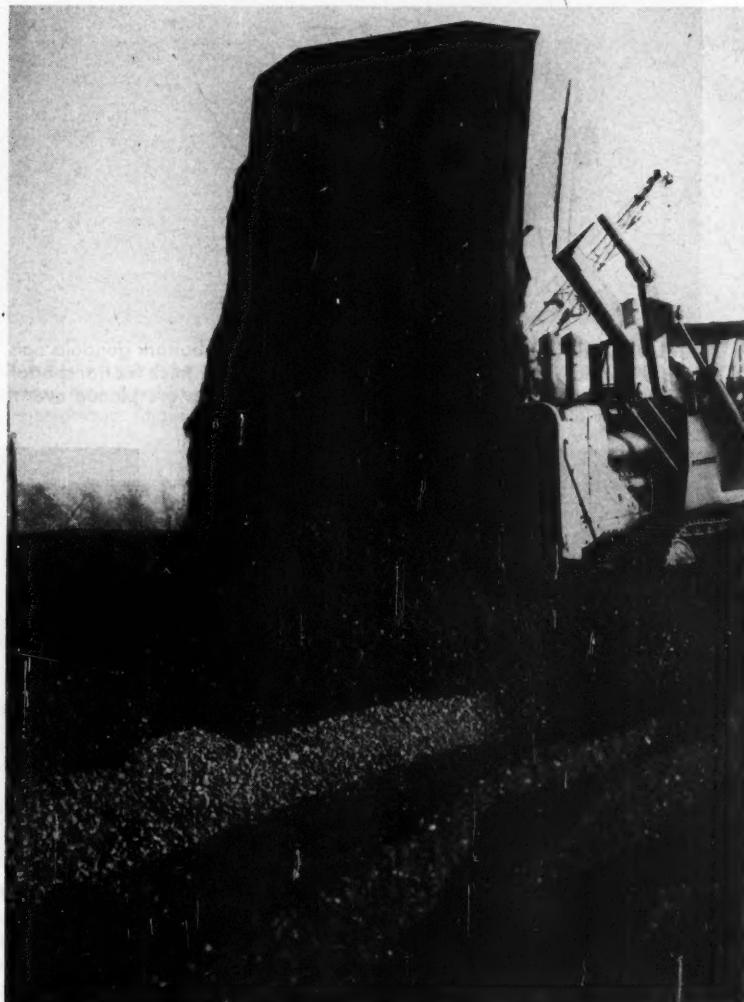
This special issue of FLOW, on the subject of "Handling Bulk Material", is divided in sections according to the type of operation involved. For example, you will find sections with such titles as "16 Ways To Receive And Store Bulk Materials", "22 Ways To Handle Bulk Material In The Plant", "What Container To Use To Ship Bulk Materials", etc.

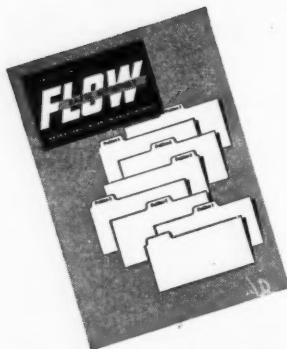
In this way, a reader who is responsible for the handling of almost any type of bulk material can find some suggestions for improved methods of handling under a given category, even though the product he is handling may not be identical to the one pictured.

For details about any of the equipment illustrated or described, FLOW will be happy to send complete information to those interested. Just drop us a line.

Index To Features On Bulk Materials

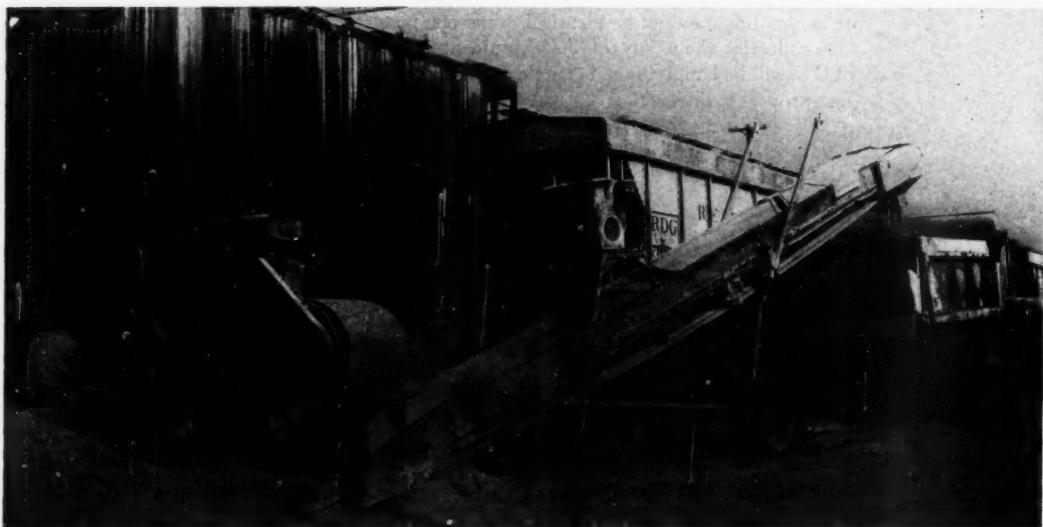
Receiving & Storing	60
Handling In The Plant	64
Handling In The Yard	70
Handling Sanitary Products .	74
Handling Coal	76
Problem File	78
(solutions to general bulk handling problems)	
Clinic On Bulk Handling . . .	82
Packaging Bulk Material .	112
What Kind Of Shipping Container	113
Shipping Bulk Material . . .	116
Carloading Patterns	122



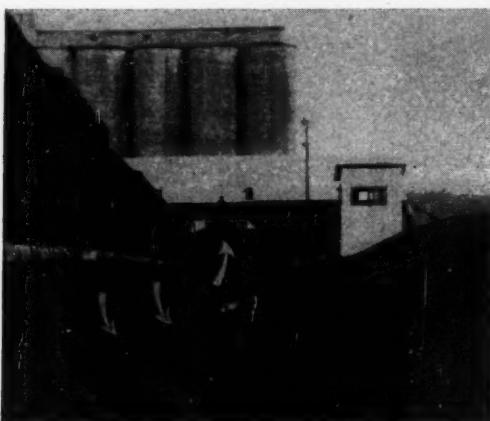


16 Ways To Unload And Store Bulk Material

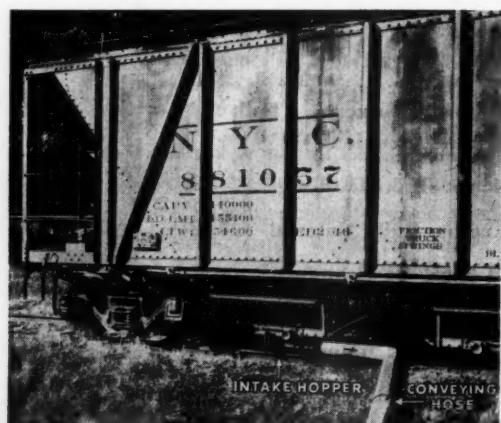
Unloading From Hopper Bottom Cars



UNLOADER CONVEYOR, spotted beneath drop-bottom gondola cars, receives bulk material and transfers it to a portable belt conveyor which loads a delivery truck for transportation to the plant. To minimize spillage and wind loss of the fine material, metal belt covers are placed over the conveyor.



DRAG SCRAPER stockpiles bulk material which has been discharged from drop-bottom rail cars spotted on the trestle. Arrows show route of flow into storage, then to a hopper which feeds conveyor to power plant. Scraper reclaims piles easily.



HOPPER BOTTOM CAR is unloaded by intake hopper which feeds conveying hose. It is stated that operator need be in attendance only 25% of the unloading time. Pneumatic conveyor transfers material to storage or directly to the final point of use.

Whether you take an entire rail car or highway truck and empty it as you would some smaller container, or whether you use other equipment to unload these carriers, there is a lot of money to be saved through effective handling during unloading. Likewise, if you can install some system which will transport the material directly to the storage area, additional time and money can be saved by the elimination of one extra handling.

On these and the following two pages are illustrated 16 methods for receiving and storage of bulk material. Depending on the volume you handle, the type of bulk material it happens to be, and the physical layout of your plant, you can select a method and a type of equipment that will be the most economical for you. Here are the

details of various types of equipment.

When The Carrier Acts As A Container

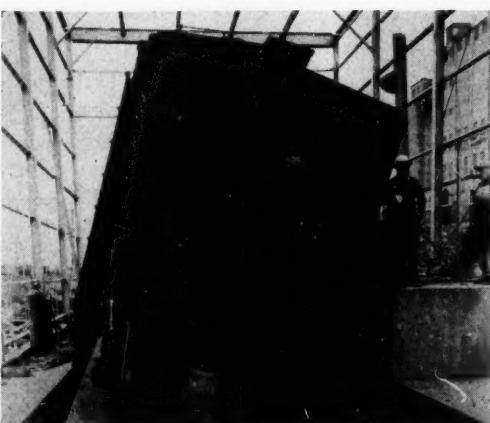
If you receive high volumes via rail car or highway truck, it may pay you to consider these carriers as nothing more than a container and empty them as such.

For example, the A. E. Staley Mfg. Co., Decatur, Ill., manufacturers of corn and soybean products, tilts an entire box car so that its contents are spilled into a pit and later elevated into the elevator facilities. On big iron rocking supports, the loaded cars are tipped endwise and sideways and then while tilted to one side are again rocked end for end. The grain doors, pushed in automatically, also

Unloading Entire Carriers At One Time



TILTING HYDRAULIC UNLOADING RAMP (arrow) upends an entire highway truck. Thus, the Glidden Co., Indianapolis, is able to unload a standard highway truck in the same way it would dump body vehicle. Material spills through a grating into a hopper and finally onto a belt conveyor which transfers it to storage.



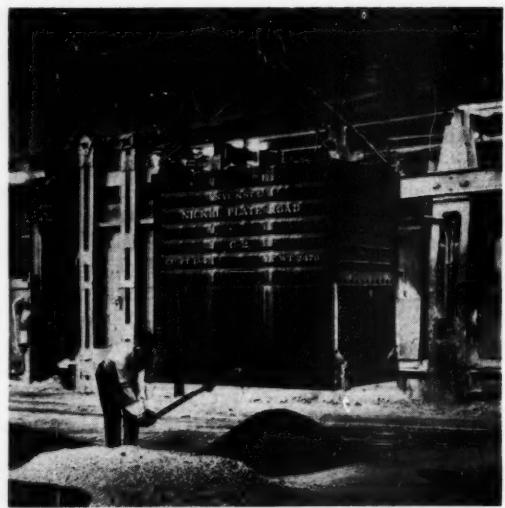
TO DUMP WHOLE BOX CARS, this unit tips loaded carriers endwise and sideways, then while tilted to one side rocks them again end for end. Grain doors, pushed in automatically also serve to block the cleared end. Car is emptied in six to 10 minutes.



DROP-BOTTOM GONDOLAS are emptied by a car shaker which is attached to the top of the cars. The raising and lowering action of the shaker is controlled by a hoist. Rotation of vibrator shaft causes vibrator-end to impart hammer-like blows.



SILOS ARE IDEAL for storing large tonnages of bulk material. Here, material is raised to the top of the storage facility by bucket elevators. When more than one silo is to be fed, diverter arms or short belt conveyor are set to feed the desired one. Gravity unloading is used.



SPECIALLY-DESIGNED BULK CONTAINER used to ship bulk material, is shown here inside the receiving plant. An operator discharges the load in small quantities as needed; some models permit immediate full discharge. Units are normally handled overhead, are also used for storage.

16 Ways To Unload and Store Bulk Materials - Continued

serve to block the cleared end, so that when tilted, the car empties completely in from six to 10 minutes.

Using somewhat the same principle, the Glidden Co. in Indianapolis, elevates standard box body highway trucks so that the load flows out of a hinged door in the rear, through a grate, and onto an under-the-ground belt conveyor. In effect, the company turns a regular highway truck into a dump body type.

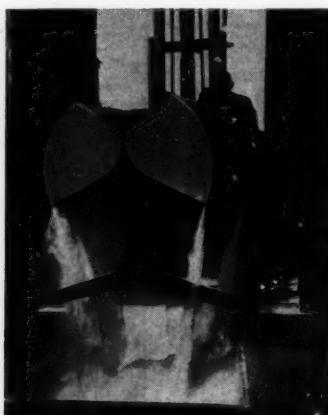
Other Unloading Equipment Is Also Fast, Efficient

Many bulk cars are now fitted with special hoppers on their undersides to which are attached a suction type pneu-

Unloading



PORTABLE LOADER carries material directly from cars to storage. Useful where space between tracks and storage bunkers is limited.

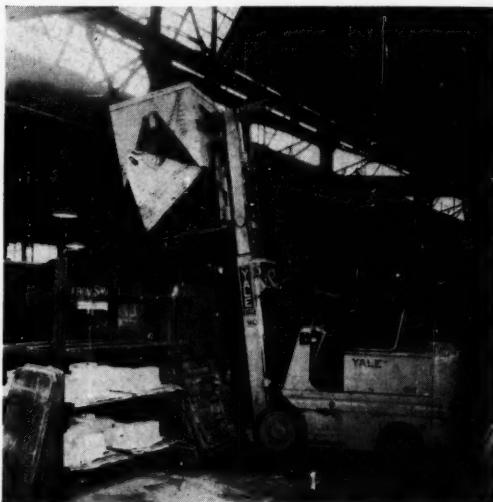


CLAMSHELL ATTACHMENT is used on this fork truck. Load is discharged into container which has a fitting for handling overhead.



PNEUMATIC CONVEYOR transfers load from rail car to truck for movement to plant. Screw conveyor (arrow) discharges the truck.

Bulk Materials



CASTERED BULK TRUCK is raised by fork prior to dumping; drop bottom of carrier is designed to discharge into large bins as shown. For short moves, within the plant, or in confined quarters, the castered units provide the flexibility that is so often needed, is easily moved and positioned by one man.



WHEN BULK LOADS ARE RECEIVED IN CONTAINERS, such as those shown, they can be quickly and effortlessly removed from carriers and stacked by fork trucks. Containers of this sort are then moved to point of use where they may be spotted in minimum space. Bulk inventory is simplified.

matic conveyor. Gravity pulls the material from the inside of the car down into the hopper, whence it is either sucked or blown through the conveyor to silos or other storage facilities. It is stated that an operator need be in attendance only 25% of the total unloading time.

Other systems provide that an operator enters the car or truck with a large nozzle attached to the end of the hose of the pneumatic conveyor. Material is sucked into the conveyor as the operator buries the nozzle into the load; he is also able to remove material even in the farthest corners of the carrier.

A peculiar unloading problem was solved by the Burkhardt Brewing Co., Akron. The company receives its bulk material in rail cars even though the plant does not have its own rail siding. The materials must be transferred to another carrier for movement to the plant. To solve the problem, Burkhardt uses a pneumatic conveyor to transfer the load from the rail car to the special bulk truck. A screw conveyor which is built into the truck unloads the material at the plant.

Turn to page 96

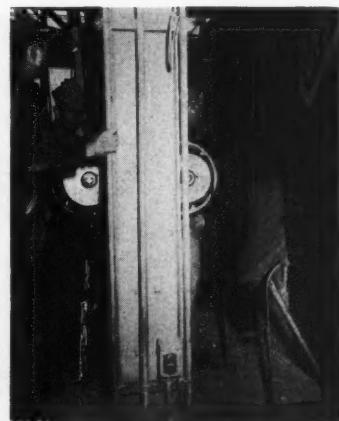
Box Cars



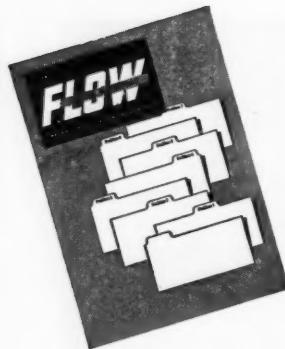
SCOOP ATTACHMENT on this fork truck adapts it for handling bulk loads. To discharge, scoop is tilted forward. Scoop is easily changed.



PNEUMATIC CONVEYOR unloads from box car to plant storage. Hose is simply inserted in the pile and re-located as needed to empty car.

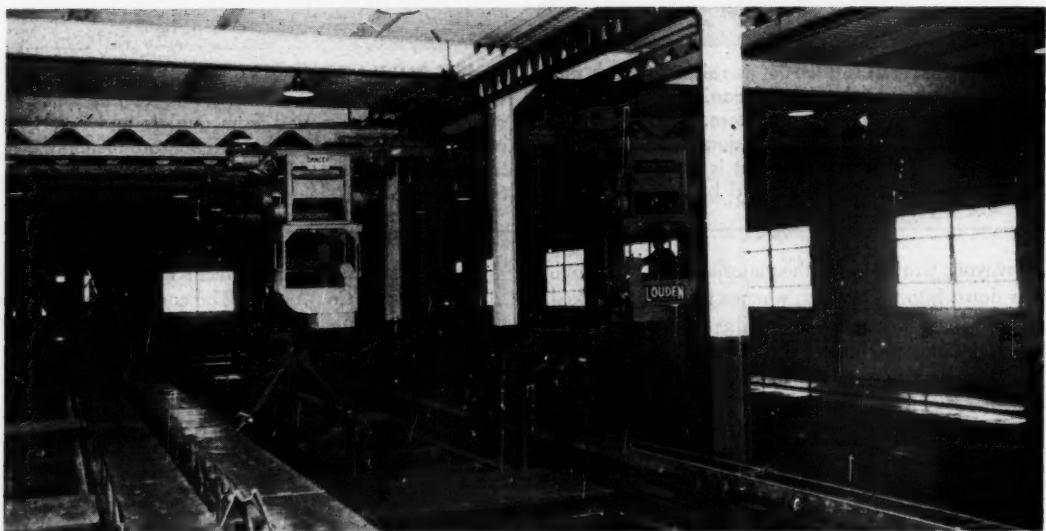


BLADE ATTACHED to powered winch is guided by operator to force bulk load out of doorway and into hopper. There is no physical handling.



24 Ways To Handle Bulk Materials In The Plant

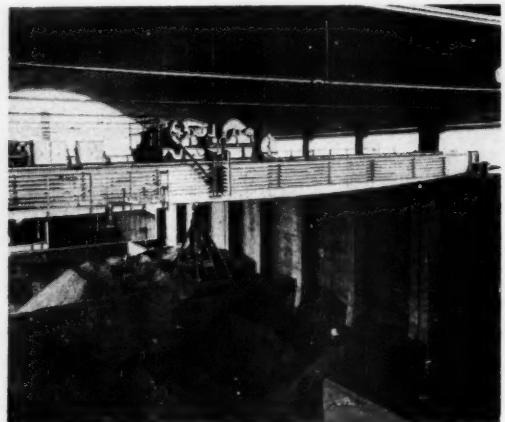
Using Your Overhead System



OVERHEAD HANDLING of finely ground protein material is done by these cab-controlled hoists operating on a monorail system. The buckets remove the material and transfer it to mixing hoppers in another part of the plant. Maximum use of floor area for storage is possible by using overhead equipment for handling.



BATCHING MATERIAL: each type bulk material is stored in a separate hopper equipped with a scale and batch spout. A monorail system suspended beneath permits operator to run the car under the spouts to collect all material for a charge unit.



TRANSFERRING FROM STORAGE: with 8-ton bridge crane with a 75-ft. span and a 3-cu.-yd. bucket. At Leigh Portland Cement plant, this crane works 24 hours a day at a complete cycle of work every 45 seconds. Maximum floor storage space is utilized.

Some of the main considerations in choosing the type of equipment for in-plant handling of bulk material are: 1. the quantity of material handled; 2. the number of different types of material handled; 3. the rapidity by which material is fed to processing; 4. the way in which material is stored.

If you are handling large volumes of bulk material and have to feed them continuously from storage to processing, conveyors are often your best bet. The type of conveyor is often as varied as the material carried. On these pages

you can see more than half a dozen different kinds of conveyors; drag chain, continuous flow, belt, steel, vibrating, apron, zipper, etc. Each has its advantages, each should be examined thoroughly before making a final selection.

When Do You Use Industrial Trucks

If you are handling bulk material in bags, drums, large bulk containers, etc., you can successfully use an industrial truck. Sometimes, when handling small batches, a front-end scoop truck or a fork truck equipped with a scoop or clamshell attachment is ideal for the job. Again, when

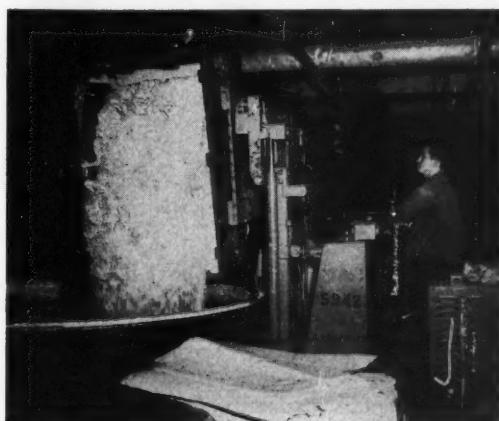
Using Your Industrial Trucks



HUGE SKID BINS of bulk material (in this case ground rubber), are moved by 4000-lb.-capacity fork truck. At a later point in the operations, containers may be emptied by overhead crane or monorail system using clamshell buckets. Note in background, palletized bags of bulk material which are also fork trucked.



MECHANICAL DISCHARGING: this fork truck is equipped with a scoop which is tilted as a chain is fed out from the mast of the truck. In this way, bulk material flows by gravity onto the ground, into containers or onto conveyors or other carriers.



BINS ARE DISCHARGED by a revolving head fork truck; contents flow into a large mixing hopper. Valuable for handling bulk material within the plant. Revolving head adapts vehicles to this type of handling but they handle all types of regular loads.

This Equipment Can Be Used For

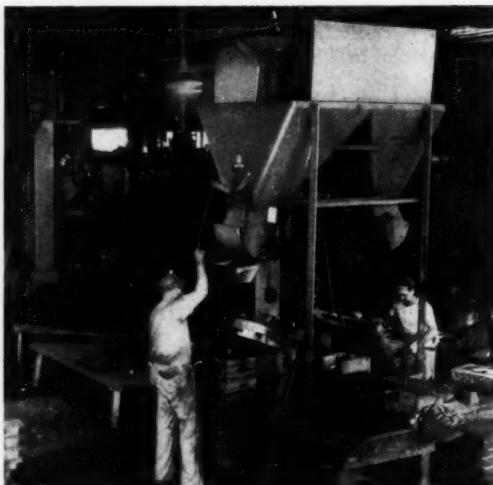


FRONT-END SCOOP TRUCK reclaims storage piles. Vehicle drives into the pile filling the scoop. The load is then transported to the next station and the scoop tilted forward, discharging the load. All operations are done without physical effort.



FOR EASY ROLLING, this pneumatic-tired buggy is used for moving loads of material short distances at the Westinghouse foundry. The buggy is filled from a loading spout, is unloaded as shown. Load flows through grating into hoppers.

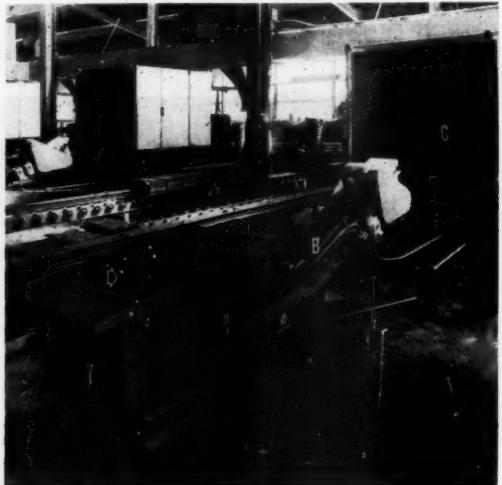
Bulk Handling In The Plant... cont'd.



HOPPERS FOR BULK MATERIAL mean automatic discharging of loads to operators. As shown, a tug on the rope delivers the required amount. Vibrating platforms settle the material which is delivered to the hoppers by mechanized equipment.

batch cans, suspended from a monorail, are moved under the discharge end of hoppers to receive the various types of bulk material. Often, automatic weighing is tied right into the batching operation.

Monorail systems can be used to connect several scattered furnaces located at different points in a yard. At the Universal Glass Co., Parkersburg, W. Va., a cab-controlled train of batch cans, traveling on an extensive monorail



TO LOAD HOPPERS IN FOUNDRIES, molds are deposited on vibrating shakeout (A), sand travels on short belt conveyor (B) onto sand stream deflector and in sand storage bin (C). After sand is screened it is raised by bucket elevator to feed hopper.

In-Plant Bulk Handling



DIESEL-POWERED CRAWLER TRACTOR with one-yd. bucket cleans slag pits in a bank of 14 open hearth furnaces in a steel mill. This equipment has eliminated the former job of digging by hand. Besides less effort, accidents have been slashed.



POWERED BARROW moves bulk material at the Buffalo plant of Allegheny-Ludlum Steel Corp. The unit has a dump body which mechanically discharges the load. Some units permit the operator to ride with the load; this one needs only guiding.

under
s types
d right

al scat-
At the
ntrolled
onorail

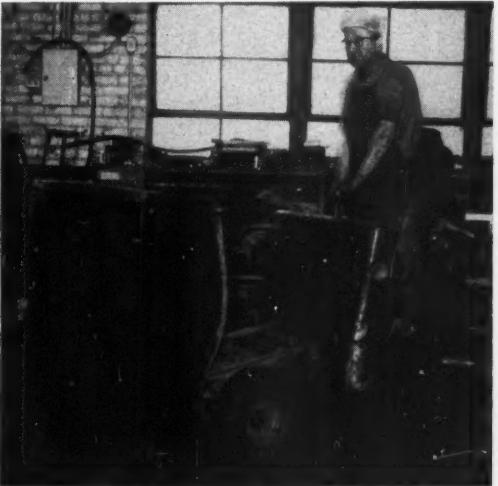
system, receives its loads from a central mixing station, delivers to any one of three furnaces located as far as 1000 ft. apart.

Overhead bridge cranes are also used for reclaiming storage piles of bulk material. Equipped with clamshell buckets and other attachments, they often transfer loads from the piles to other carriers or directly to the processing point.

Getting back to monorail systems for a moment, automatic dispatch systems can be used in foundries, for example, to move sand from a centrally located muller to coremakers benches located throughout the room. The station destination is set on the dispatch train, the material is moved to the desired point, automatically discharged into a hopper, and the train returns to the muller to pick up its next load. The entire operation is automatic.



APRON CONVEYOR continuously removes chips, turnings and borings from production machines. Scrap may be fed into skid box as shown, or where series of these units serve line of machines, they all can feed onto one belt conveyor.

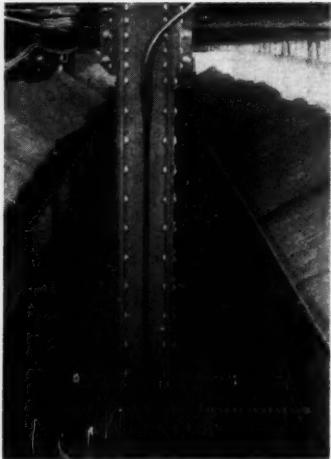


FOUNDRY MOULDING SAND is loaded into the hopper of this powered barrow from an overhead chute. Operator then transports the sand to desired point in the plant. Distribution to the moulders on the floor is simple and quick task.

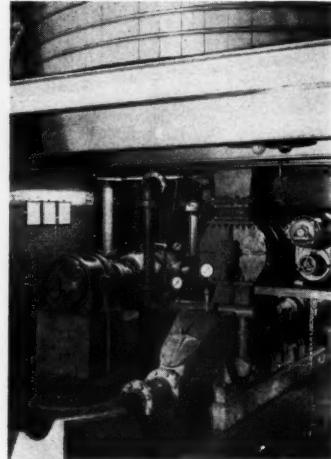
Here's How Conveyors Can Be Used For In-



STORAGE IN TRANSIT is illustrated on this 13-ft.-wide steel belt conveyor used for conveying sugar. Belt is easy to keep clean.



HEAPING LOADS of soap powder are carried by twin steel belt conveyors. This type of belt is also used for hot material.



STATIONARY PUMP conveys pulverized phosphate rock from storage to plant 150 ft. away, at a rate of 10 to 25 tons per hour.

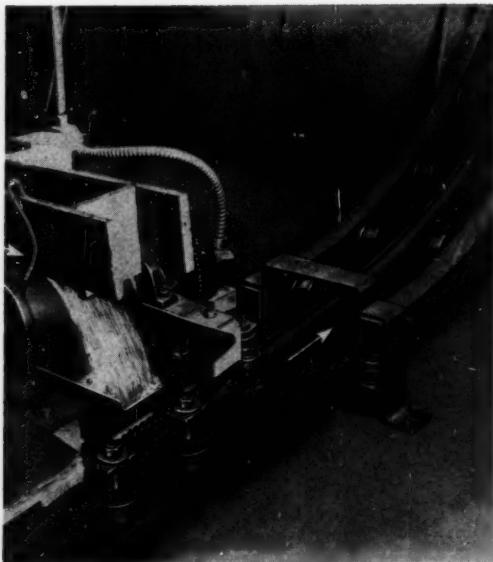
Bulk Handling

In The Plant . . . cont'd.

small loads are moved reasonably short distances, castered equipment on powered barrows are recommended. See the photos on these and the following four pages for specific examples.

In addition to industrial trucks and conveyors, there is a raft of specialized equipment that is designed specifically for handling bulk material. All of these serve an important function.

For example, drag scrapers are widely used for reclaim-

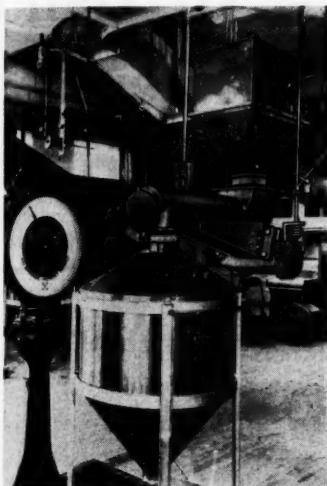


DETAILS OF ZIPPER BELT CONVEYOR: bulk material is discharged into small hopper which feeds zipper belt which is open. Full belt is forced through guides which close zipper forming a dust-tight carrier. Zipper is also opened automatically.



WHEN MATERIAL IS ABRASIVE, you can often use a pivoted bucket conveyor like this one at Burroughs Adding Machine Co., Detroit. The conveyor is used for moving coal from storage to furnace bunkers, resists the constant abrasive action of loads.

For In-Plant Bulk Handling



FOR NON-FREE FLOWING MATERIAL, tubular vibratory feeder moves medicinal salt into hoppers. Vibration is tied in with scale.



ELEVATING BULK MATERIAL is done by flight conveyor. Loads are collected in pit, transferred to production on an upper floor.



HOSE SELECTOR SYSTEM for directing conveyed material to any of four destination points. System consists of pneumatic conveyors.

ing material from storage locations. In one western grain mill, a drag scraper moves material from scattered locations in the storage building to a conveyor which runs in a pit down the center of the structure. In another installation, gypsum rock is fed into the storage building by an overhead shuttle conveyor, is reclaimed at the rate of 33 tons per hour by a one-cu.-yd. drag scraper which feeds the ma-

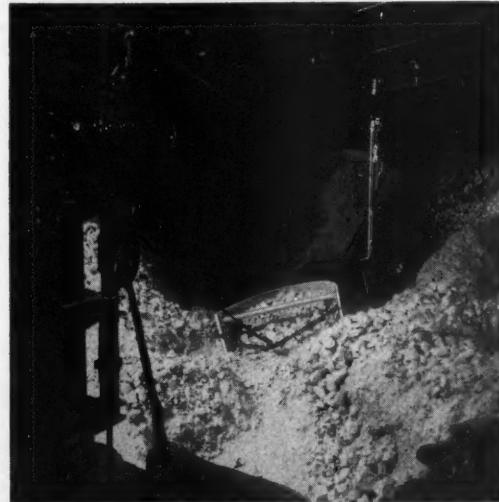
terial to a belt that delivers to a crusher mill. Both these installations are illustrated on these pages.

One of the most widely used types of equipment for batching bulk materials are monorail systems. In the glass making industry, such systems are used for batching mixes to a central furnace. Where several ingredients are used,

Using Drag Scrapers



RECLAIMING BULK MATERIAL is the job of this drag scraper operating in a Texas grain warehouse. Material is dragged from both sides of the building onto a belt conveyor operating in a trough down the center of the structure.



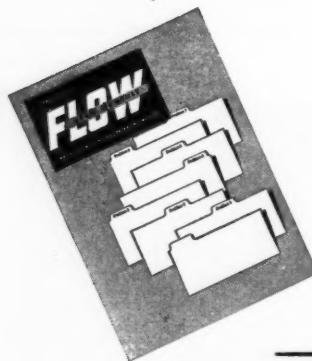
RECLAIMING 33 TONS PER HOUR is the job of this drag scraper which is shown moving gypsum rock from a storage building to a conveyor which transfers the load to the mill. The scraper has a one-cu.-yd. capacity.

veys
from
at a
ur.

stered
see the
specific

there
pecific
an im-
claim-

ften.
Bur-
veyor
ace
ads.

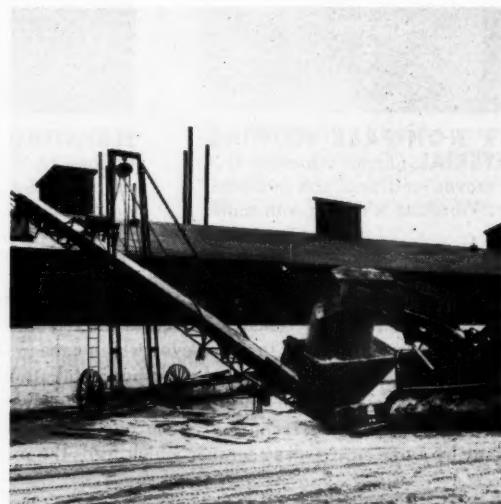


16 Ways To Handle Bulk Material In The Yard

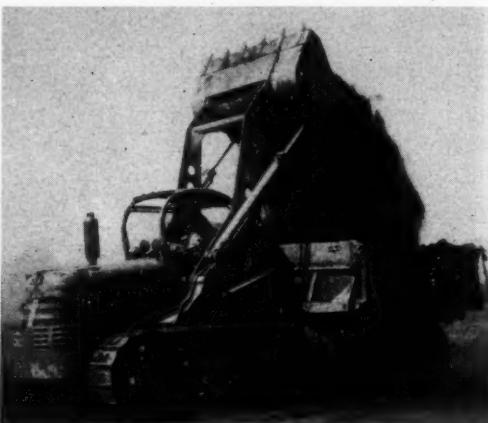
How Tractors Are Used In The Yard



HANDLING WASTE MATERIAL is the job of this diesel tractor with a bulldozer attachment at the United States Metals Refining Co., Carteret, New Jersey. This tractor is dozing out slag and waste product from the refining of copper.



FOUNDRY SAND is loaded from the storage pile into an elevating loader. Sand is transferred through the roof into bins in the core room. This diesel-powered crawler-mounted tractor is equipped with a special front-end scoop to handle the material.



ANOTHER CRAWLER-MOUNTED TRACTOR, equipped with a front-end scoop, loads a highway truck which will transport the bulk material to the plant, some distance away. These scoops are available separately for mounting on tractors.



THIS DIESEL TRACTOR is equipped with a piece of flat steel for pulling ore into piles so that a clamshell can more easily pick it up. The tractor works backward at all time stockpiling ore in the bottom of ships. User: The Cottman Co., Baltimore, Md.

Since a great many companies store bulk material in the yard, the handling to and from stock piles and the plant constitutes an important area of saving through efficient handling. Probably the most important consideration in yard handling is that oftentimes, great distances have to be covered by the handling equipment. Here are some of the many types of equipment that can and are being used for handling bulk material in the yard.

Mobile Cranes and Shovels

One of the most often used types of equipment for bulk handling are power cranes and shovels. Either tire or crawler-mounted, these tools are able to handle high volumes in a single lift. When operating in and around piles, where traction is of great importance, crawler-mounted

models may be preferred. However, when long distances must be traveled within the yard, tire-mounted or truck-mounted cranes may be called on.

When cranes are used to feed from a stockpile to a hopper or conveyor which feeds the plant, these storage locations should be located adjacent to the loading point if possible. The Horvitz Co., Cleveland, one of Ohio's largest paving and construction firms, locates the feeding hopper adjacent to the stockpile of its most often used aggregate so that the swinging action of the crane boom is sufficient to transfer between these two points without additional travel.

Bridge cranes are also often used in the yard. Bulk material is stored beneath the span of the crane, which, when equipped with a clamshell bucket, can move the material

How Mobile Cranes And Shovels Are Used



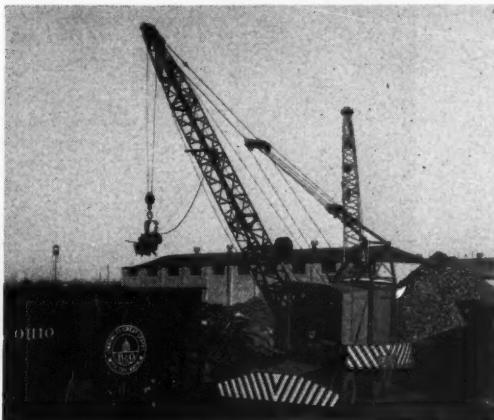
FROM STORAGE TO PLANT in one easy sweep of the boom is accomplished by this crawler-mounted crane. If possible, it is best to locate storage piles of most used material adjacent to delivery point so a crane can transfer a load without actual travel.



POWER SHOVEL IS DESIGNED FOR DIGGING. is equipped with a 3 1/2 cu.-yd. shovel, a 32'6" boom and a 22" dipper handle. Swinging action of the boom transfers the load from the face to the truck. Crawler-mounted body is suited to rough terrain.



FOR LONG MOVES IN THE YARD, a truck-mounted crane is often selected. Rubber tires are designed for lengthy travel but can not negotiate piles of bulk material as can a crawler-mounted model. Highway trucks carry bulk loads to the plant.



SCRAP IS BULK MATERIAL TOO. This truck crane is equipped with a 50-ft. boom and a 36" diameter lifting magnet. The same machine is also used for handling sand and coke, the lifting magnet then being replaced with a 3/4-yd. clamshell bucket.



CASTERED BULK MATERIAL TRUCK is carried by fork truck long distances from plant. The carriage of castered vehicle tilts mechanically to discharge load. Inside plant, scrap is loaded into the vehicle which can be spotted in confined quarters.



TO MOVE SAND FROM A STORAGE SHED to the foundry, this firm uses a powered barrow on an intermittent schedule during the day. The body of the vehicle is dumped mechanically. Barrow itself is powered for travel, operator guides the vehicle.

Handling Bulk Material

In The Yard . . . cont'd.

How Powered Rolling Equipment

from its storage location to a feeding point. Cab-operated monorail systems are also used for delivering material from the yard to the plant.

Industrial Trucks, Tractors And Front-End Scoop Trucks

As covered in previous sections, industrial trucks equipped with scoop attachments can be used very effectively for bulk handling. Some companies store small quantities of different materials in bins in the yard which are reclaimed by industrial trucks. In addition, front-end scoop trucks, and tractors equipped with dozers or scoop attachments are also specifically designed for such handling chores.

Here's Other Equipment



FOR SPOTTING RAIL CARS, this vehicle is equipped with both tires for operating on the ground and flanged wheels for travel on tracks. Changeover requires only half a minute. When the transfer car is over the tracks other wheels will descend.



TO HANDLE A WIDE VARIETY OF MATERIAL, you can use a conveyor system like this on which 16 different classifications of material are handled daily. 14 fixed belt conveyors and stackers comprise the system. Many operations are integrated.



HEADED to
on an
body of
itself
vehicle.

MENT

PERATED
material

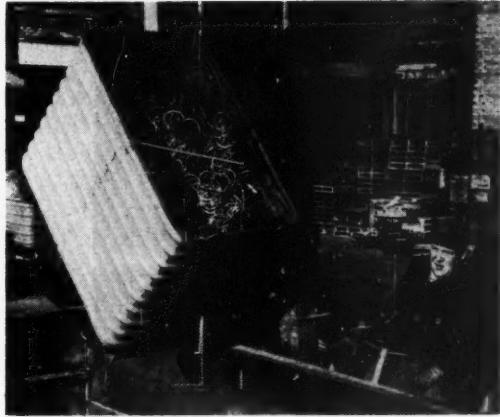
TRUCKS
effect-
the small
which
front-end
scoop
in han-

MENT

IAL,
ach 16
ndled
prise

LOW

PILES OF BULK MATERIAL, in this case coal, are reclaimed by a fork truck equipped with a scoop attachment. Load is carried to the plant or loaded in a delivery truck or other carrier which transports to the building. Scoop is discharged automatically.



REVOLVING HEAD FORK TRUCK is used to discharge a loaded skid bin, full of scrap, in an outside storage bin. Skids are loaded directly from machines in the plant, are picked up regularly by fork trucks and transported to the yard.

Is Used In The Yard

Powered barrows are mighty valuable tools to have around. While their bodies may be adapted to handle load units, they are specially suited to carrying bulk materials. Some provide for the operator to ride with the truck; others require that the operator only guide the barrow. All have a mechanical dumping feature that requires no physical effort to discharge the load.

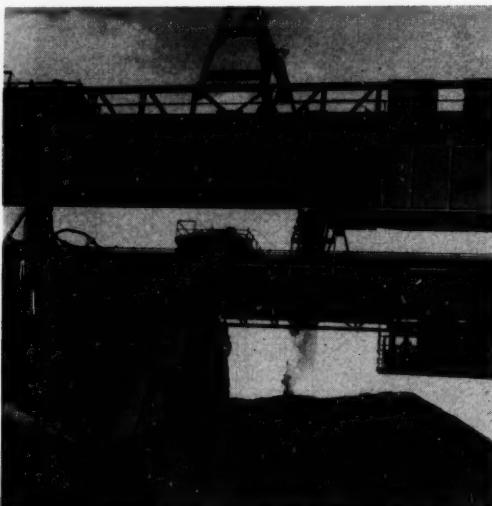
How Conveyors Are Used In The Yard

As was discussed in a previous section, belt conveyors are widely used for receiving and stockpiling bulk materials. Similarly, belts can be used to transfer material

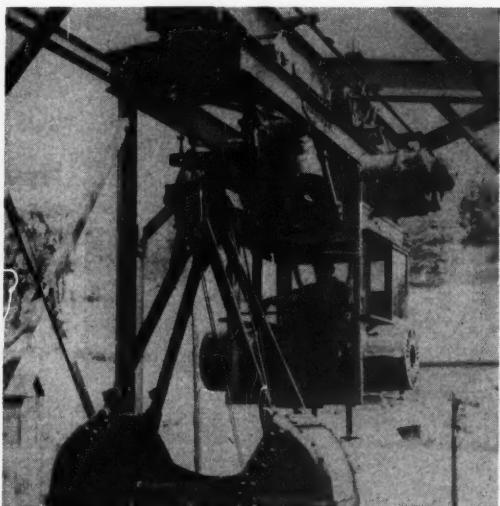
continuously to the plant. Short loading conveyors which draw material from a pile may be used to feed longer units. Also, tractors, industrial trucks, cranes, and other equipment may be utilized to load the belts. Sometimes small hoppers are attached to the feed end of the conveyors to eliminate spilling when transferring.

In addition to belt conveyors, almost all other types which would normally be installed in the plant to handle bulk material can be successfully used in the yard. Where very fine materials are handled, to eliminate loss through spillage, etc., or where sanitation is a factor, continuous flow, zipper, enclosed flight or other similar types can be utilized.

You Can Use



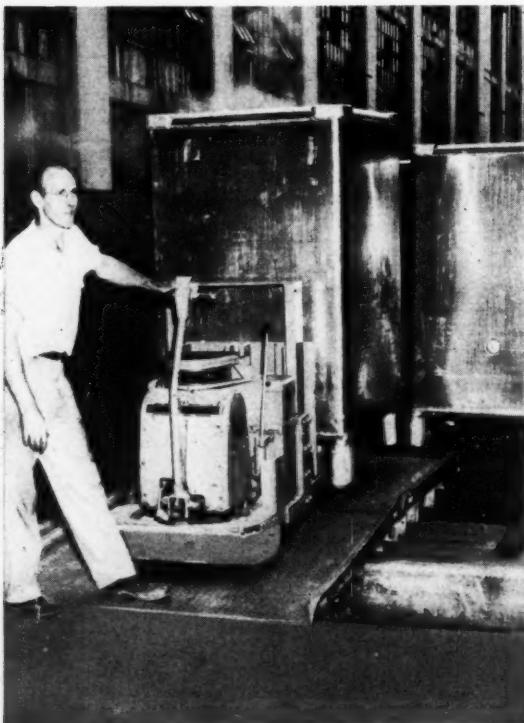
OVERHEAD BRIDGE CRANES for reclaiming in the yard. These have 15-ton capacities with 100' spans and are used for handling limestone and cement clinker. While material must be piled beneath their span, maximum storage area is utilized.



CAB-CONTROLLED MONORAIL HOIST with a $\frac{5}{8}$ -cu.-yd. bucket is designed for bulk handling. This unit is used by a large machine tool builder in Pennsylvania for unloading coal at a siding as well as filling the stoker hoppers from the storage yard.



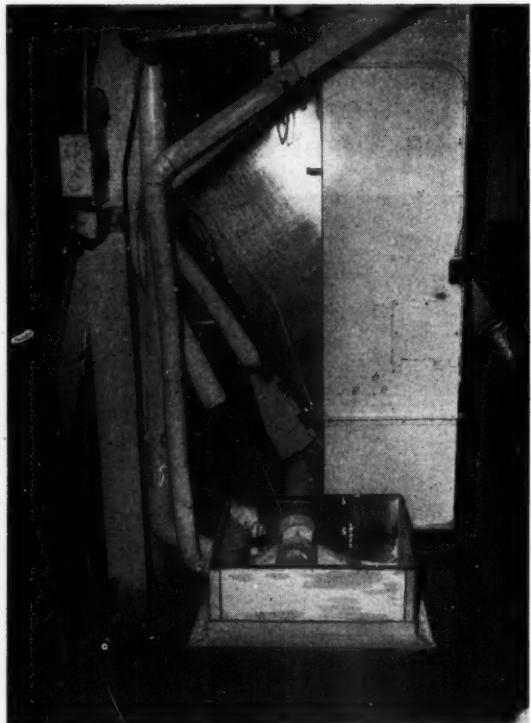
EMPTY PORTABLE BINS are taken to the refinery and filled right on the highway truck. A 40,000 lb. load of sugar is loaded in about 30 minutes. It is delivered in bins to the American Chicle Co., (see photo), where...



A WALKIE REMOVES the bins from the highway carrier. They are taken directly to the production floor to be emptied as needed. To industrial trucks are used; this one for moving bins from receiving dock, and

When cleanliness and sanitation are
For example — if your product is
a pharmaceutical — here's a way

Keeping Bulk



A TILTING MECHANISM raises one side of the bin to discharge the load. It pours into a screw conveyor in the bottom of the tilt which discharges the sugar through the tilt and a tilt extension into a bucket elevator.

are
uct is
ay
llk

a major factor . . .

a foodstuff — or

of . . .

Material Clean In Portable Bins

Smooth, economical handling of bulk materials, and savings which, in less than one year, have amounted to more than the cost of new handling equipment—that's the record of American Chicle Co.

After its production lines were streamlined recently, this chewing gum manufacturer decided to improve its handling of sugar, a product which it uses in large quantities. With an eye toward easy handling, speed, economy, and cleanliness, several methods of handling bulk materials were thoroughly investigated before it was decided that portable bins met all the necessary requirements.

The 74 cu. ft. capacity bins being used are equipped with a top opening for filling, and an opening on the bottom of one side for discharging. Measurements are 3-1/2 ft. by 4 ft. by 6 ft. high, (or less). Tare weight is 225 lb. The bins have legs to facilitate handling by lift trucks, and stacking pads to permit high-piling.

In operation, a truckload of bins is taken to the sugar refinery where, while still on the truck, they are filled through the top openings. Then they are sealed to insure maximum cleanliness, and taken to the American Chicle plant. There, the portable bins are taken directly to the production floor, and unloaded as the sugar is required. About a one-day supply is kept on the production floor in bins at all times.

The only special equipment required to handle the portable bins is a tilting device. As a result, maintenance and house cleaning problems have been practically eliminated.

Some amazing dollars-and-cents savings have resulted from the use of portable bins. A bulk discount alone now saves over \$40.00 per month on the cost of sugar in each bin. This is enough to pay off the whole capital investment in less than one year. In addition, product losses have been reduced over five cents per cwt., and warehousing and dumping costs have been cut greatly.

In just six steps, sugar goes from refinery to production department

1. Empty bins to refinery.

4. Bins taken to production area.

2. Filled and sealed while still on carrier.

5. Stored until needed.

3. Delivered to user plant.

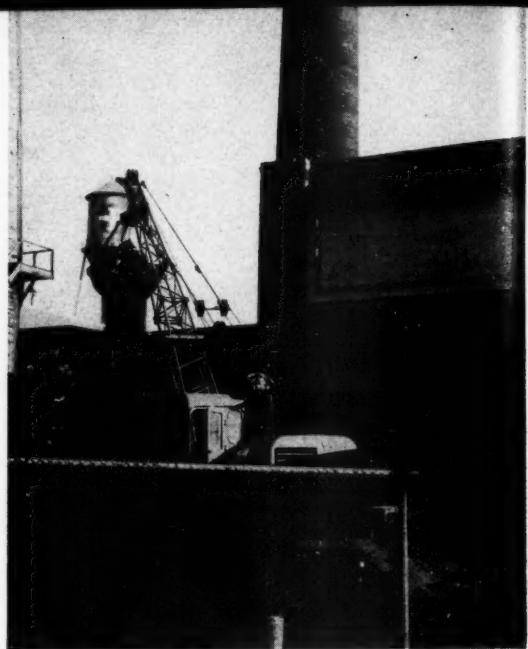
6. Unloaded directly into production machinery.

How Coal Is Handled

By Metalworking Plants

Any plant that uses coal to supply its heat, light, power, etc., must, of necessity, handle bulk material. These operations, while often overlooked with regard to effective material handling, can mean money saved or money wasted. In addition, good coal handling can prevent costly, often disastrous interruption of vital power with the accompanying lost production.

Typical of an effective coal handling system, is the one at the Burroughs Adding Machine Co., Detroit. The system is pictured at the left, and shows the remarkable degree of efficiency in the Burroughs system. While the company burns an average of 60 tons per day, the material is quickly and effortlessly transferred from incoming gondola cars to the plant or to stockpiles. The entire system is completely without human effort.

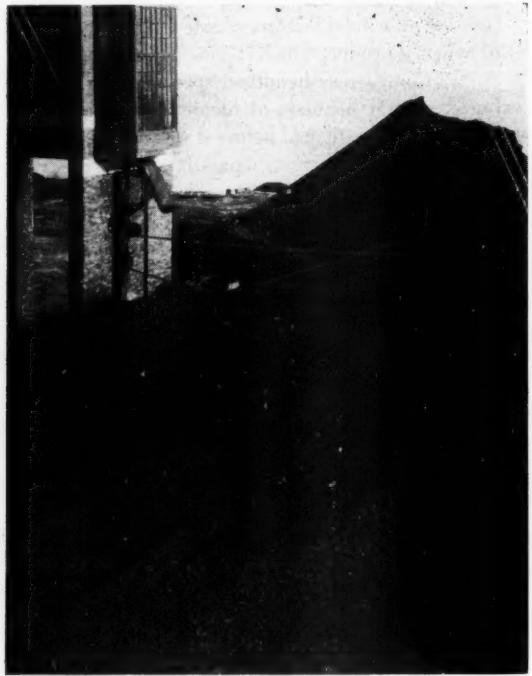


MOBILE CRANE FEEDS COAL from a gondola to a storage pile. This equipment also reclaims the coal, feeding it into highway trucks, which dump into a track hopper, which also receives the main bulk of coal from rail cars. Coal feeds

Here Are 4 Other Effective Ways to Handle Coal...

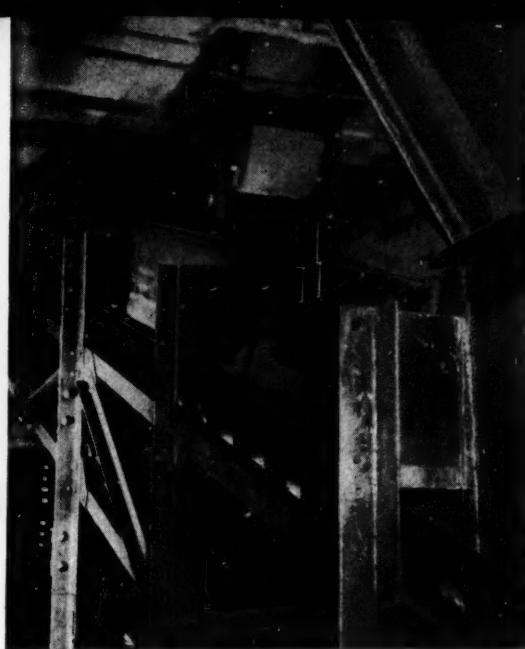


THIS TRACTOR-SHOVEL, with a seven-yd. bucket is working on a coal storage pile. Such equipment is used to compact piles to prevent spontaneous combustion, is also used for reclaiming operations.

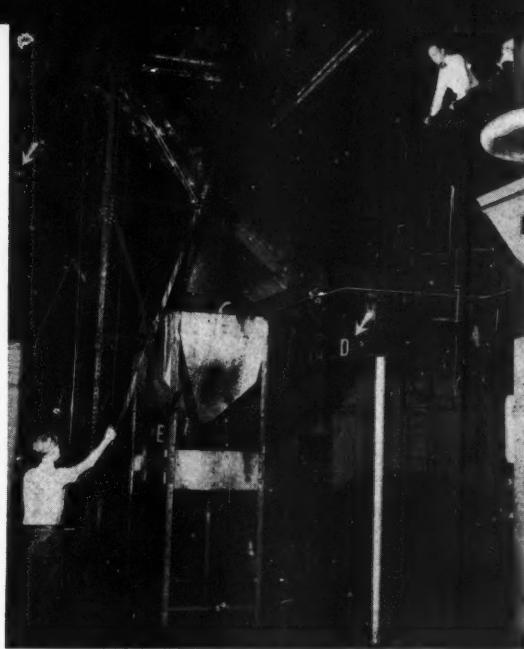


COAL STORAGE DOCK of small power plant receives its coal by boat. Here, drag scraper reclaims from pile deposited by boat at the edge of the dock. Shown is reserve stock across 200' area by scraper.

ola to a
the coal,
o a track
coal from



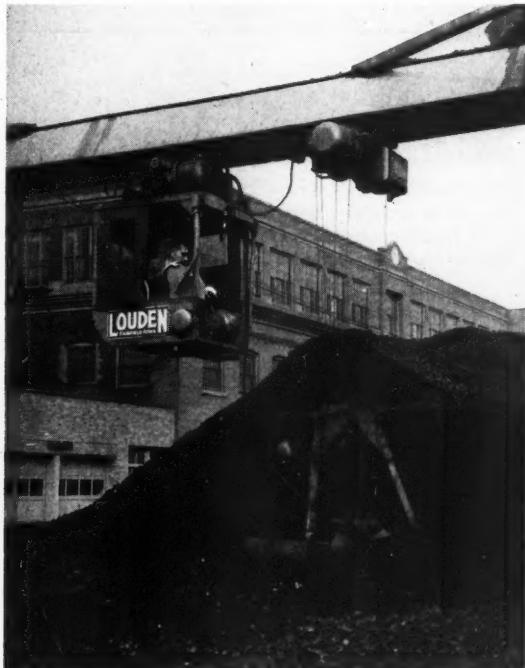
AN APRON CONVEYOR which transports it to the crusher. At extreme right is the track hopper, which has a capacity of 30 tons. Apron conveyors are designed to take the continuous abuse given it by the loads, at the same time transport high volumes. Next



COAL IS RAISED to bunkers in the roof where it feeds by gravity to a weigh larry (a). Other equipment in this photo: (b) boiler, (c) wall separating stoker room (d) drag chain conveyor, (e) small apron conveyor. The entire operation is done without physical effort.



FOR PICKING UP, MOVING AND DUMPING COAL, this fork truck, equipped with scoop attachment, will do the job. Dumping action is controlled by driver. Scoop attachment may be added and removed quickly.



CAB-CONTROLLED HOIST, operating on a monorail, reclaims coal from yard to stoker hoppers. Cab operated overhead equipment is desirable when routes are lengthy (so operators don't have to walk), and where precise spotting of loads is necessary.

**There Are Many Problems That Arise
When Handling Bulk Materials.
Here Are 19 Ideas That May Help You.**

Do You Have One Of These Common Bulk

PROBLEM 1

**How To Handle Bulk
Material When Sanitary
Conditions Are Vital
— *here are three ways***



THESE CONTAINERS are designed to ship bulk materials in large lots, also keep them sanitary. In the users plant, they are tilted and unloaded by a screw conveyor. Legs on bins permit entry of fork trucks; the units may also be stacked.

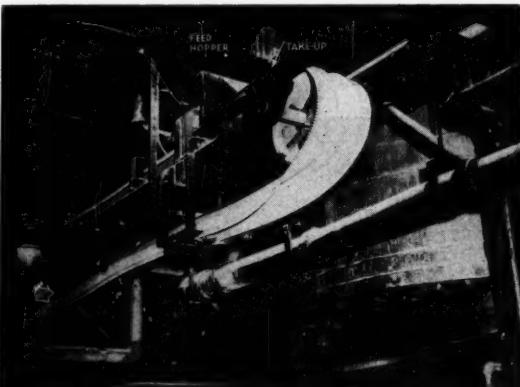
PROBLEM 2

**How To Handle Very
Fine Bulk Material
— *here are three ways***

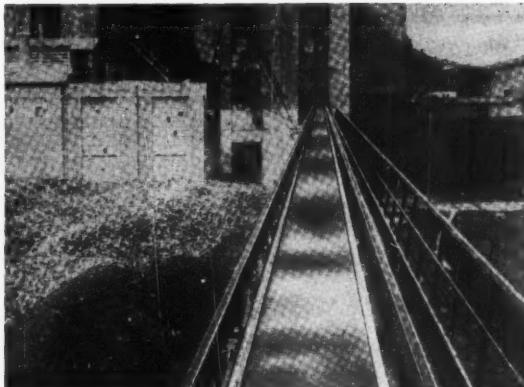


FINELY POWDERED CERAMIC MATERIAL is moved by this Zipper conveyor which prevents contamination and material loss while keeping moisture content uniform throughout the handling operation. Note details on photo which explain Zipper construction.

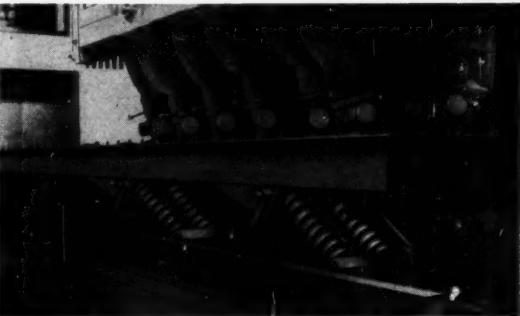
Bulk Handling Problems?



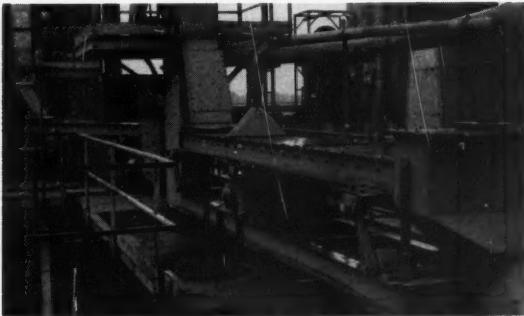
ZIPPER CONVEYOR protects the load, in this case lead chromates, from spillage and contamination. Traveling at a speed of only five-ft. per minute, these conveyors handle 750 lb. per hour. Zipper belts handle in any plane or combination of planes.



HANDLING FOODSTUFFS with this steel belt conveyor is not only economical and fast, but also very sanitary. The conveyor has been designed and constructed so that material can be easily scraped off the band and carrying surface cleaned.



OSCILLATING CONVEYORS keep product in and dirt and elements out at this plant. The conveyor, which is 24" wide, handles 40 tons of highly abrasive silicon carbide each hour. Spring mountings isolate vibration from the building structure.



DUST TIGHT HANDLING is the rule at this plant which produces high volumes of wood flour as a by-product of its production. Eight continuous flow conveyors and eight vibrating conveyors are used. The latter are shown here moving flour from sifters.

bulk
ma-
e users
nveyor.
ay also

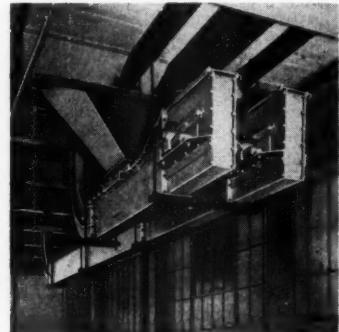
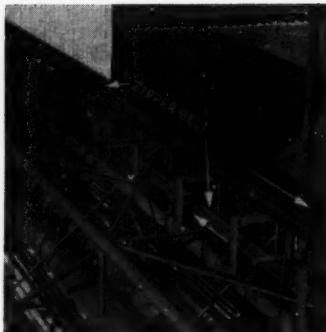
removed
n and
uniform
photo

FLOW

19 Ways For Overcoming

PROBLEM 3

How To Handle Bulk Material To Prevent Breakage — *here are two ways*



HANDLING EXANTHATE PELLETS: this zipper container, with a speed of 25 ft. per minute does the job. It moves up to 4000 lb. per hour. Total distance covered: 148 ft.

CONTINUOUS FLOW CONVEYOR moves almonds and peanuts from storage bins to air cleaners. There is no churning or breakage of load.

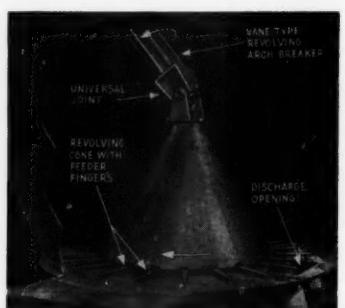
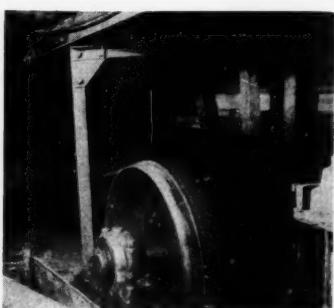
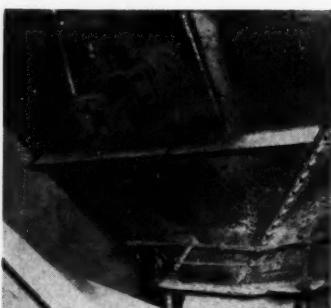
PROBLEM 4

How To Handle Frozen And Sticky Bulk Material — *here are five ways*



TO FREE MATERIAL IN CHUTES, this company mounted a vibrator to do the job. Vibrators are widely used on bins, trucks, rail cars, etc.

AIR LOOSENS JAMMED MATERIAL TOO. As shown, air is forced into panels (dotted lines) causing them to inflate freeing material from walls.



WHEN BINS CLOG, you can often install an air-powered vibrator on the side of the container. Manual pounding on the sides of bins is thus eliminated.

WHEN MATERIAL STICKS ON BELTS, this "turnover belt" presents a clean side to idlers (to prevent clogging), then turns again to receive load.

FREEING MATERIAL FROM BINS: this device is installed inside the bins; fingers sweep material from walls, force it down through opening.

ning

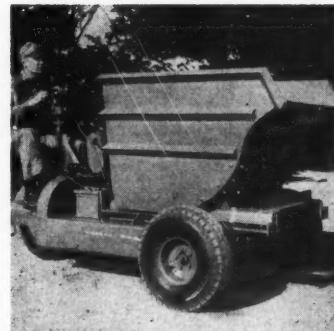
Bulk Handling Problems

PROBLEM 5

How To Handle
Hot Bulk Material
— *here are two ways*



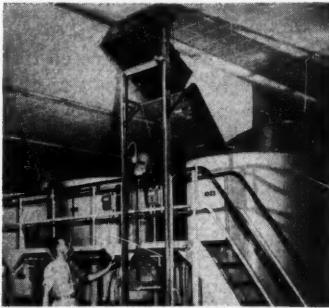
HOT FERROUS SULPHATE is moved from dehydrators to roasters on this 32" wide steel belt conveyor. The conveyor delivers 150 tons per day.



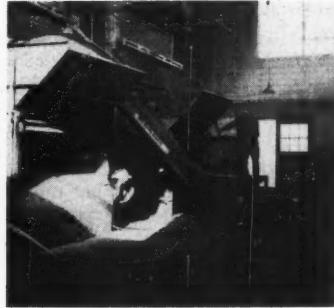
THIS MECHANICAL DUMP TRUCK is designed for all types of bulk material. Metal construction is ideal for hot material, and operator doesn't touch the load.

PROBLEM 6

How To Elevate
Individual Loads
Of Bulk Material
— *here are two ways*



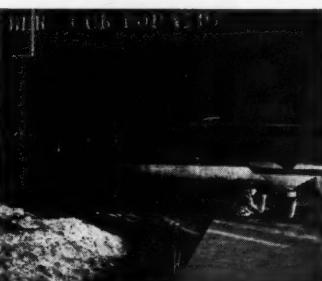
TO DUMP BAGS, this portable unit is spotted next to bins, vats, etc. The bag is placed on the platform, is raised to the top and dumped.



BELT CONVEYOR moves 15 tons of stoker coal every 24 hours from floor level into bins. Manhours were reduced 50%.

PROBLEM 7

How To Handle
Carbon Black
Also—How To Measure
Bin Capacities
— *here are two ways*



HANDLING CARBON BLACK is done effectively at the J. M. Huber Co. Incoming pelletized black is unloaded from hopper car into screw conveyor.



INDICATORS ON BINS can automatically tell you how much bulk material is in storage facilities, may be set to relay information all over plant.

Workshop - Type Clinic
Provides Suggestions on . . .

How To Solve Tough Bulk Handling Problems

A great many material handling problems which for years have plagued industry are on the way to being solved. That is apparent from the results of the first in a series of user-editor-manufacturer symposiums being sponsored by the Material Handling Institute. The conferences, under the guidance of the Institute's Industry Service Committee are an important phase of an Industry Service Plan. The first one dealt entirely with increasing industrial efficiency through improved methods of handling materials in bulk.

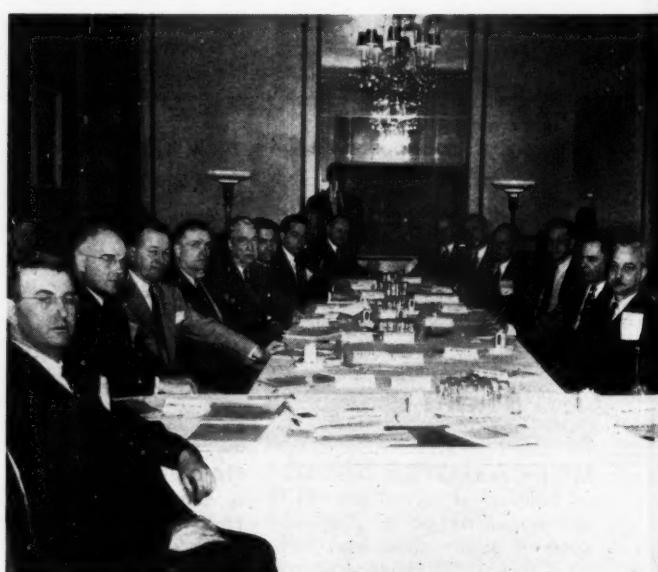
To come to common-sense solutions to heretofore unsolvable problems, eight users, who posed the queries, and eight manufacturers, who provided the answers, sat together in informal discussion. Problems in handling bulk materials in the ceramic, chemical, coal-mining, grain, metal-producing, mineral-mining, quarrying, and process industries, were subjected to analysis, by experts. The conclusions reflected clear thinking and years of experience on the part of each participant. Anyone handling bulk material should find the discussions both interesting and valuable.

Problem: What is the economic limit, or break-even point between a silo- and conveyor installation as compared to an outside-conical-pile and scoop-truck system in the raw storage and handling of chrome, magnesite, olivine and flint at a use rate of 400 to 800 tons a day, (max. of 50 tons per hr.). Specifications: eight or 16 hr. cycle of batching operation; average lump size of two in.; 4000 to 30,000 tons in each pile depending on mineral; no harm from moisture (although drying to remove two to three per cent moisture precedes batching); 300 ft. maximum scoop truck run from piles to batching point.

Suggested Solutions: Without more detailed analysis, it was agreed that for the use rates and intermittency of operation cited, a fully developed silo- and discharge conveyor system would likely cost more than justified by savings in operating costs over any reasonable amortization period. Further, no improvement of product or deduction of loss would seem to be a marked advantage worth investing for.

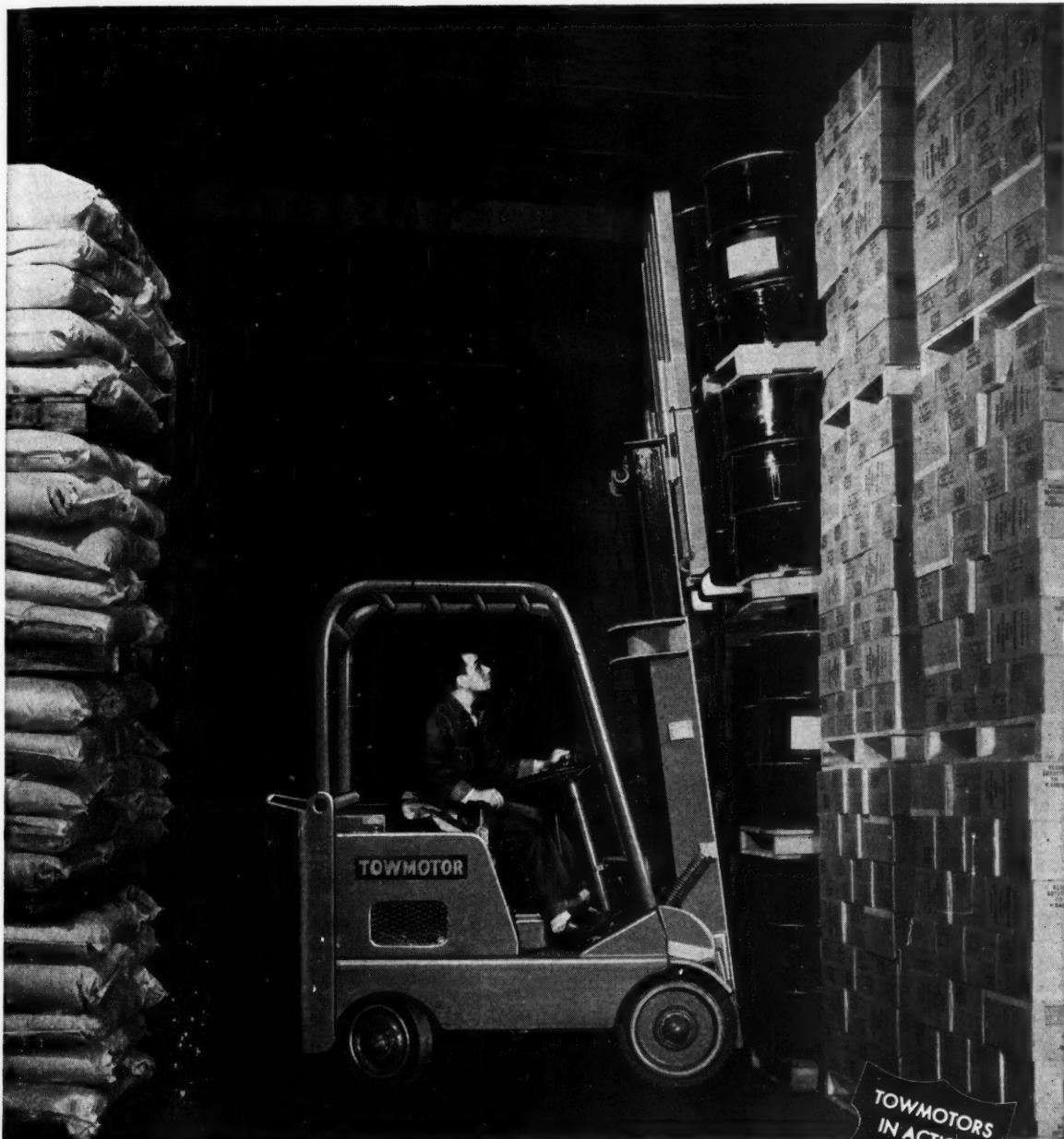
Turn the page please

PARTICIPANTS IN THE MATERIAL HANDLING INSTITUTE CONFERENCE on "Better Methods of Handling Dry Materials in Bulk" were (left to right, center table): L. West Shea, President, MHI; A. K. Strong, American Cyanamid Co.; L. G. Weller, Fuller Co.; Carleton Lord, United States Steel Co.; S. M. Mercier, Jeffrey Manufacturing Co.; C. D. Gabor, Harbison-Walker Refractories; Fred Sheriff, Clark Equipment Co.; E. Lee Heidenreich, Jr., Designing Engineers; O. W. Werner, Link-Belt Co.; (standing) E. R. Lutz, Atlas Powder Co.; H. H. Hall, Aluminum Company of America; F. J. Schmidt, American Steel Dredge Co., Inc.; A. B. Crichton, Jr., Johnston Coal and Coke Co.; E. W. Franz, May-Fran Engineering Co.; A. D. Sinden, Stephens-Adamson Manufacturing Co.; M. C. Dow, New York Trap Rock Corp.; R. F. Wikoff, The Thew Shovel Co.; B. R. Carter, MHI Staff (not shown).



break-
illation
scoop-
chrome,
00 tons
height or
size of
ding on
ing to
ching);
atching

analysis,
ency of
ge con-
fied by
mortiza-
or de-
vantage



Stacking drums of liquid soap ceiling high at Eastman Kodak Company, Rochester, N.Y.

use every inch...

stack to the roof, save space, double your storage area. You can do it easily, quickly, economically with a Towmotor fork lift truck. Towmotor handles all types of material. For the name of your nearest Towmotor Representative and a copy of Towmotor's tabloid size magazine on materials handling, write Towmotor Corporation, Div. 8, 1226 E. 152nd St., Cleveland 10, Ohio.

TOWMOTOR
THE ONE-MAN-GANG®

**FORK LIFT TRUCKS
AND TRACTORS**

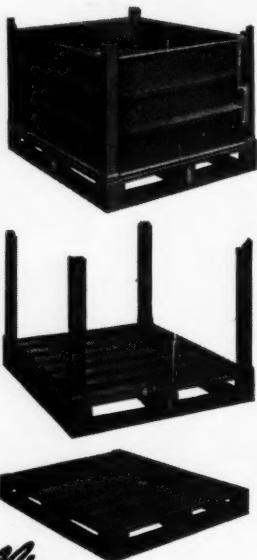
R E C E I V I N G • P R O C E S S I N G • S T O R A G E • D I S T R I B U T I O N

Circle No. 54 on Reader Service Card for more information

BUILD THE
exact type
 OF PALLET OR
 MATERIALS HANDLING BOX

you need...

This versatile unit is composed of three basic sections: (1) heavy-duty, 8-way entry pallet—made of sturdy welded sections, with deck of corrugated steel, (2) four strong corner stakes and (3) sides of heavy gauge corrugated steel, which slide in corner stakes. All parts fit snugly. Handled by either fork or pallet lift trucks, the Erect-A-Pallet is made in two sizes: 48" x 48" and 40" x 48". Carrying capacity: 4000 lbs.; tiering capacity: 16,000 lbs.



POSSIBLE COMBINATIONS



MANUFACTURERS
 SINCE 1863

PHILLIPS PITTSBURGH,
 MINE AND MILL SUPPLY COMPANY PA.

MATERIALS HANDLING EQUIPMENT

2300 JANE STREET • PITTSBURGH 3, PA.

Circle No. 55 on Reader Service Card for more information
 84

Portable bin boxes were suggested, but deemed also too costly for refractory-producing plants of the indicated size. An approximation of silos could be made, it was pointed out, by concrete partitioning into bins — especially since overhead belt conveyor with trippers was already in use for piling after crushing of received minerals. Space utilization might also be improved at the expense of minor construction.

Problem: What is good boxcar loading system for outgoing loose materials (1/4-in. size and less) which won't create present serious dust problem?

Suggested Solutions: A suggested solution by using roof-hatch cars was spiked by noting that such cars are hard to get or rent under today's conditions and that the use of such cars poses a difficult unloading problem for customers.

Most workable idea was use of an automatic conveyor-loader of type which requires no individuals inside the car. Further, such unloaders permit car doors to be closed down to -chute-width opening during the loading operation — and canvas or rubber flaps can cover even this narrow opening above and below the chute.

CHEMICAL INDUSTRY

Problem: Users of chemicals in volumes as small as one to four carloads per month constitute a large segment of American Cyanamid's business for semi- and free-flowing dry chemicals. Typical consuming industries are paint and varnish manufacturers and the paper industry.

These chemicals are currently shipped in multiwall paper bags which cost 10 to 20 cents each and hold 50-100 lbs. The selling price must cover cost of the product, bags, and also labor cost in packaging and shipping.

Cyanamid would like to ship to these customers in bulk, using hopper bottom cars. Savings resulting from elimination of conventional containers and the accompanying labor cost could be passed on to customers in the form of a lower product price. On the basis of these savings, the customer must justify facilities at his plant to receive and handle bulk shipments.

Conventional bulk-handling facilities appear to be too costly for these customers to take any interest in installing them. What can the manufacturers of material handling equipment suggest which would provide such facilities at a minimum capital outlay?

Suggested Solutions: The problem divides itself into two parts — unloading the materials from a bulk-shipping car into intermediate storage, and transferring the materials from intermediate storage to the points of use.

Two methods of unloading were suggested — pneumatic and mass-flow. Some of the materials are hygroscopic and corrosive when moist; therefore, pneumatic conveying introduces the problem of moisture in the air. An offhand estimate for pneumatic unloading equipment was \$8,000.

En masse conveying (Redler, Mass-Flow, Bulk-Flo, etc.) seemed to be an effective method for handling the unloading. In addition to circumventing the moisture problem, this approach was thought to be less expensive.

Two methods for handling from intermediate storage were suggested, both involving the use of portable bin boxes. In one case a silo would be provided, large enough to hold the contents of a car and a half. About 10 bin boxes would be needed to transfer from the silo to the points of use.

med also indicated, it was especially already in ls. Space of minor

on for out-
which won't

using roof-
are hard
at the use
problem for

conveyor-
the car.
be closed
operation
s narrow

all as one
gment of
e-flowing
ure paint

ly.
multiwall
d 50-100

product,
ng.

to be too
nstalling
handling
ilities at

into two
ping car
aterials

neumatic
opic and
ing in
offhand
\$8,000.
(lo, etc.)
unload-
problem.

storage
ble bin
enough
10 bin
o to the

FLOW

In the other case, the silo would be eliminated by providing enough bin boxes to hold at least a car and a half, requiring about 40 boxes in inventory. The estimated cost would be about the same, the additional boxes costing about as much as the silo.

Hazardous vapors in the area prohibit use of fork trucks. The customer may have to provide air-operated or explosion-proof lifting and tilting equipment at point of use.

A total figure on the order of \$15 - \$25,000 seemed to be a reasonable approximation of cost — amortizable in a reasonably brief period. It was thought that the customer would find additional savings in his own operations, besides the savings in purchase price of the chemicals, making justification of bulk handling facilities promising.

COAL MINING INDUSTRY

Problem: A common underground conveyor problem faces the coal mining industry. Coal, a low priced commodity, sold by the ton rather than by the pound, is actually selling for less today than it did in 1948. Because cost of labor has risen sharply, as well as most supplies purchased by the industry, an effort is being made to reduce production costs; for the fuel industry in the United States is one of the most competitive of all major industries.

The belt conveyor is rapidly becoming the standard method of underground mine haulage. This conveyor is particularly well suited for the mining of "low coal" — or thin seams. Whereas a surface belt may last from 10 to 15 years, an underground belt because of unfavorable conditions may last only four years.

Another consideration of this problem is the extra safety precautions required by the mining laws because of the remote possibility of fire hazard through belt friction. Still another contributing factor is the necessity for coal companies to stock huge quantities of replacement belts. For example, one company producing five million tons of coal per year has a reserve of 200,000 ft. of 30 to 36-in.-wide conveyors on hand which means that between five to six million dollars are tied up in this one item.

It was suggested that the manufacturers should give this problem serious consideration as the coal industry, realizing underground belt transportation to be an excellent solution to mass moving problems, has become one of the major users of belt conveyors.

Suggested Solution: It is evident that a problem of this nature is not readily solved by discussion. However, many interesting ideas in connection with cost reduction were mentioned by the conferees. It was pointed out that longer belt conveyor centers tend to reduce cost by the elimination of transfer points resulting from a series of shorter conveyors. This means less machinery, less degradation of coal, and a reduction of dust. In addition, it reduces the use of costly water piping, sometimes running for miles for wetting down dust, and a reduction in power cable lengths. A recent U. S. installation illustrating the preferred use of longer conveyors was a two-mile-long coal conveyor made possible through a specially constructed belt conveyor.

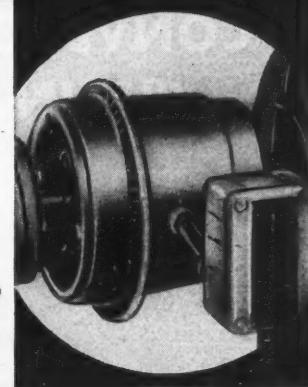
Neoprene-coated steel-reinforced belts, another recent development, may be a partial solution to stronger belting at a lower price. This material, with somewhat similar characteristics of rubber, is more fire resistant, withstanding up to 450°F at which point it chars.

Turn the Page Please

POSITIVE Overload PROTECTION

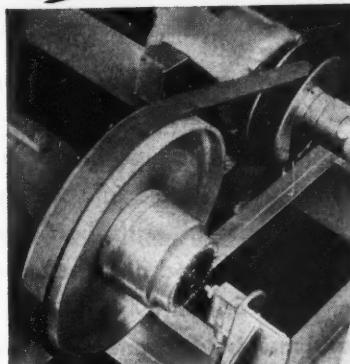
**ANCHOR-
WALDRON**

**Torque-
Sensitive
Mechanical
Control**



COUPLINGS

**for all
direct drives**



(Incorporates stand-
ard flexible cou-
pling) Operating
range 10 to 2,000
inch pounds.

PULLEYS for belt or chain drives

Operating range 20 to 10,000 inch pounds

These automatic mechanical units make use of increasing torque to control the operation of machinery. They protect machinery from overload and reduce "down time" by eliminating sheared pins. They will also operate signals to give ample warning of build up in load.

Since 1938 many large industries have specified ANCHOR CUT-OUTS. A positive mechanical, electrical, and controlled overload cut-out device. Write for Catalog No. 51.

Also WALDRON Gear Type and Franck
Pin Type Couplings. Catalogs on request.

JOHN WALDRON CORP.

NEW BRUNSWICK

NEW JERSEY

Circle No. 56 on Reader Service Card for more information

Need Conveyor Chain? **NOW**

We're In Position To Make
IMMEDIATE DELIVERY

X458 Drop-Forged

Rivetless CONVEYOR CHAIN



Improved production and material conditions have enabled Jervis B. Webb Company to stock an adequate supply of X458 Chain—ready for immediate delivery—to meet your conveyor system needs.

The No. X458 Drop-Forged Rivetless Chain for Trolley Conveyors (illustrated above) has the improved webbed side link which substantially stiffens it. Also, this type link prevents telescoping of the chain while in service. Simple and strong, it is cheaper and lighter per unit of ultimate strength than any other type of conveyor chain. It can be installed or removed by unskilled labor. Having no rivets, welds or bolts, X458 Chain requires no special or joining links and may be disconnected at any point, yet it is so designed that it cannot become disconnected while in service. No. X458 Chain is completely interchangeable with the Webb FIRST—the original No. 458 Chain designed in the early Twenties by Mr. Jervis B. Webb.

Send us your specifications and requirements. Prompt reply promised.



A British development, the cable belt conveyor, shows promise of being a contender in future belt engineering. It utilizes two wire cables to carry supporting cross connectors which act as a road bed for a light, inexpensive belt. The sheaves may be spaced at long distances and as the power is transmitted by the cables it makes possible the use of long centers. The conventional idler is eliminated.

A verbal analysis of belt manufacturing suggested that if a more modern and continuous method of belt construction could be devised it would result in lower belt production cost.

Actually the belt conveyor problem resolves itself into two parts of which the first is the development of lower cost belting to be used for existing installations. Second, a long range basic study is required to review the complete situation for the purpose of simplification. Research work is currently underway by Bituminous Research to help reduce conveying cost and thus lower coal production cost.

GRAIN HANDLING INDUSTRY

Problem: A major consideration is the handling of malt and corn grits in a brewery after these products have been cleaned.

At one installation the materials are received by truck or rail, elevated 140 ft. to the top of a brewery, and distributed to a series of bins that are 140 ft. deep and occupy a floor space of 80 x 80 ft. Then the materials are drawn out from the bottoms of the bins, blended, put into other bins, then moved to the processing department.

Amount of malt to be handled is 3000 cu. ft. per hour, or 60 tons. The volume is the same for corn grits, but, being heavier, the weight of this material to be handled is 90 tons per hour.

These are the conditions to be taken into consideration in solving the handling problem satisfactorily: there must be a minimum of rubbing together of particles; no dust at transfer points; air is to be drawn from the bins at at least the same rate that the bin is filled, so that no dust is forced out of the bins.

As in all food handling systems, sanitation is required and residues of materials in which insects can develop are to be avoided in handling equipment.

In the past, these materials were

the cable
use of being
engineering.
carry sup-
which act as
ensive belt.
ed at long
er is trans-
es possible
e conven-

elt man-
f a more
od of belt
d it would
on cost.

er problem
s of which
s of lower
existing
ng range
view the
purpose of
rk is cur-
ous Re-
ying cost
on cost.

NG

eration is
n grits in
cts have

erials are
ated 140
and dis-
that are
or space
erials are
s of the
ins, then
partment.
ndled is
ns. The
rits, but,
this ma-
er hour.
be taken
the han-
: there
going to
transfer
from the
that the
forced

systems,
dues of
develop
equip-

s were

FLOW

raised to the top of the brewery by bucket elevators and distributed by screw conveyors.

Suggested Solutions: The first answer proposed is the use of an air handling system, operating on the suction principle. This system would employ multiple car unloading hoses and a vacuum receiver on top of the silos.

Air conveyors also were suggested for distributing the material to the bins, and it was pointed out that a great many breweries already are using air conveyors successfully.

In drawing the materials from the bins and blending, the air handling system would use metering valves under the bins, or feeders with variable-speed drives could be used under each bin in the blending operation. This had not been done before in a brewery, but has been done in other industries. As little as two percent of a blend may be taken from one bin.

The pressure-type air handling method also was suggested as an answer to the problem. But the point was made that the suction system is more effective for unloading cars and trucks. The observation also was made that the suction of the air system would pull air from the bins at a rate somewhat faster than the bins are filled, creating a partial vacuum and solving the dust problem. This would be achieved with the aid of a rotating air lock with pockets which discharge into the hopper feeding the screw conveyors. Since the screw conveyor outlets are over the bins, dust from the bins is exhausted through them to the suction system. Therefore, no dust collectors would be needed.

Screw conveyors are means of distributing the materials to the bins. Although not as completely self-cleaning, they are widely used and commercially satisfactory.

Vibrating conveyors were considered a third solution to the distribution problem, and these have the advantage of being sanitary. No "dead" material can collect in them and they are easily cleaned. The en masse type conveyor is still another possible solution to the problem of elevating the materials and distributing them.

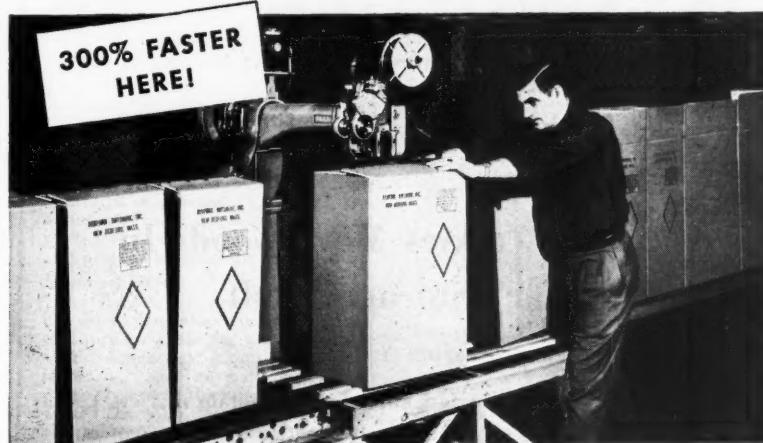
In this particular application gravity discharge of malt and grain from the air system to the silos was rejected for structural reasons.

(Turn the page please)



1. Bottoms sealed 80% faster than with tape, reports this novelty manufacturer. He now bottoms his cartons at the start of his conveyor system with a Bostitch bottom-stitcher, which makes its own staples from wire. Girls rapidly fill those cartons as they speed along the conveyor.

One production line...2 big savings with Bostitch wire-stitchers at both ends of the line



2. One man does the work of three at the other end of the same conveyor... with a Bostitch top-stitcher replacing tape. This novelty maker also says that his staples cost him only 1/2 as much as tape per carton... his cartons are much stronger and neater... his workers happier.

How much time and money can you save in your shipping room?
It's easy to find out. 300 BOSTITCH field men in 112 cities in the U. S. and 11 cities in Canada offer you nearby service. Illustrated bulletin shows you how 30 of the 800 Bostitch models... wire-stitchers, stapling machines, hammers, pliers, tackers, staplers... do your fastening jobs better and faster. Mail the coupon below today.

BOSTITCH, 390 Mechanic Street, Westerly, R. I.

Please rush me Bulletin 267 which shows how 30 Bostitch stapling machines save time and money in many vital shipping room jobs.

I'm particularly interested in Bostitch machines for: assembling cartons top-sealing bottoming sealing corrugated wrappers repairing cartons for re-use bag-sealing covering barrels tagging Other _____

Name Title

Company

Address

City Zone State

BOSTITCH®

fastens it better *AND FASTER* with wire

Circle No. 58 on Reader Service Card for more information



SAFE FROM ATOMIC BOMBS is this filing cabinet filled with valuable papers as it rides into a vault under Iron Mountain. Walkies, such as this one, are used extensively for handling all types of heavy loads in this unique warehouse.

Powered Walkies Move Goods In "Atomic War" Storage Vault

Every day, highway carriers enter Iron Mountain in New York State, with full loads of precious art objects, important papers of banks and insurance companies, jewel collections and other public and private valuables. Because deep inside this mountain are thousands of vaults which are designed to protect their contents even in case of atomic bombing. When finished, the total storage area will amount to 1,800,000 cubic feet.

Deep under the ground, material handling equipment is doing a job too. "Walkies" such as the one shown above, are busily moving incoming loads into the various vaults. Almost every day, highway trucks travel the 125 miles from New York City bringing irreplaceable office and other records. Often these are in steel filing cases, two of which are strapped together and palletized. After they are unloaded, "walkies" snake them through the narrow passages to the assigned vault. The "walkies" are ideal because they reduce handling to a push of a button and because they can easily negotiate the narrow aisles and doorways. Other heavy items are palletized and moved mechanically, too.

One phase of this materials handling problem is the movement of corn grits horizontally to a point 600 ft. from the elevator.

This can be handled by an air conveyor, also. One mid-western brewery has an 800 ft. carry in its air handling system. Other conveying means could be employed, too, depending upon factors such as the number of obstructions to be bypassed.

METAL PRODUCING INDUSTRY

Problem: Best method of handling large quantities of coal in and out of emergency stock piles operated in conjunction with a coke plant.

The specific case under consideration involved an outdoor area about 800 ft. wide and extending approximately 2000 ft. along a river. A total of approximately 1,700,000 tons of coal is stocked in three to six piles which normally are 30 to 50 ft. high. At present three types of coal are stocked—low-volatile, and washed & raw high-volatile—and other grades may be stored in the future.

The handling problem is complicated by the erratic flow of coal to and from this stock pile. Receipts can be as much as 24,000 tons per day and are divided about equally between rail and barge. Shipments can be as high as 36,000 tons per day, most of it by barge. It is possible that once or twice a year the system might be called upon to receive 500,000 tons in a single month and to ship 600,000 tons in another month.

It is desired to develop methods and facilities to replace a coal bridge equipped with two 6-ton buckets which serve the most active coal pile. This bridge also loaded and unloaded barges with coal moving from and to the other piles not serviced by the bridge. It is desired that the new facilities offer greater flexibility and serve all coal piles equally well.

Suggested Solution: It was generally agreed by the users and suppliers present that the best method of stock piling coal involved a sequence of barge unloader, belt conveyor and self-powered earth moving and compacting equipment. The specifications for each to be determined by the exact layout.

The discussion of de-stocking re-

handling
of corn
600 ft.

air con-
brewery
handling
s could
g upon
obstruc-

NG

handling
out of
ated in

considera-
on about
pproximate-
A total
ons of
x piles
t. high.
al are
ashed &
grades

compli-
to and
can be
ay and
between
can be as
most of
at once
ight be
00 tons
00,000

methods
bridge
s which
e. This
unloaded
and to
by the
new fa-
tary and
l.

as gen-
and sup-
method of
sequence
or and
and com-
cations
the ex-

ing re-

FLOW

volved around two possible solutions: (1) tunneling, (2) expanded utilization of motorized equipment.

The tunneling operation would involve construction of a series of parallel closed trenches at ground level approximately 50 ft. apart and extending back from the river the depth of the coal pile. Belt conveyors installed in these trenches would be fed from electrically controlled gates at 25-ft. intervals through which the coal would fall by gravity. De-stocking would be worked around the perimeter of each coal pile, and coal would be pushed by bulldozer to the conveyor gates. The extensive tunneling would be considerable. While this system is considered efficient for stocking-out it would not be used for stocking-in operations.

Motorized equipment was strongly endorsed for both stocking-in and stocking-out operations. It was estimated that a fleet of seven or eight units of 21-yd. capacity could handle 20,000 tons per day and additional units could be leased to handle peak loads. This equipment can haul capacity loads up 15-per cent grades and is particularly useful in compacting and reclamation work.

MINERAL MINING INDUSTRY

Problem: During strip mining, the face extends away from the plant as mining proceeds. The main problem: "How to provide power to equipment operating between the ends of power lines and the face?"

Suggested Solutions: Three types of power were suggested.

The first: trolley-diesel-electric vehicles designed so that the diesel engines operate beyond the limits of the electric power supply. This type was considered as having limited application because of the expense of the equipment. However, it is definitely applicable where distance between shovels (at the face) and the electric power lines are considerable and/or grades of travel are severe.

The second: trolley-battery vehicles which are particularly applicable where the distance and service between power lines and the face can be adequately serviced by batteries. One such installation, now in operation, is at a

(Turn the page please)



**truck-man runs 18,000 HOURS
without Major Overhauling!**

Unsolicited, unedited, this quotation is from a letter which accompanied a Truck-Man owner's order for replacement parts:*

"... After six years at approximately 10 hours per day steady running I find it necessary to rebuild the majority of gears, sprockets and other movable parts on one Truck-Man and prepare to do so on another..."

Another* writes:

"... We are not only well pleased but we do not believe there is a piece of equipment on the market which would serve our requirements any better... Our normal load would probably run in the neighborhood of 4,000 lbs. ... We now have four Truck-Men ... that run possibly 20 hours every day continuously... The cost of operating a Truck-Man is certainly extremely low, as it uses very little gas and oil... We have had very little maintenance on this equipment."

What convincing evidence that you *don't have to buy expensive, cumbersome equipment* for four out of five horizontal material handling jobs! Truck-Man's low weight to pay-load ratio combined with its rugged air-cooled engine make excep-

tional efficiency possible. You burn only a gallon of gas on most 8-hour shifts. You can take steep inclines, run at speeds up to 8 m.p.h. You get a rubber-cushion ride, hydraulic lift, smooth start and stop, 360° steering. Of course, the operator rides in comfort.

Four versatile models are available; the well-known Model D 3500 lb. Skid Lift, Model DF 3000 lb. Pallet Toter, Model DT 2000 lb. Platform Utility and the brand new Truck-Man TRUC-TOR of 13,000 lb. towing capacity. They're your answer if you have load limit problems on elevators, floors or docks. Many use Truck-Men as feeders to their heavy equipment. Whether your plant is 10-man or 10,000-man, there's a place for Truck-Man in your picture. Send for new 1952 catalog just off the press.

*Names on file

truck-man **Div. of The KNICKERBOCKER CO.**

582 Liberty St. • Jackson, Mich.

Send me the New Catalog describing four Truck-Man Models

Name _____

Title _____

Address _____

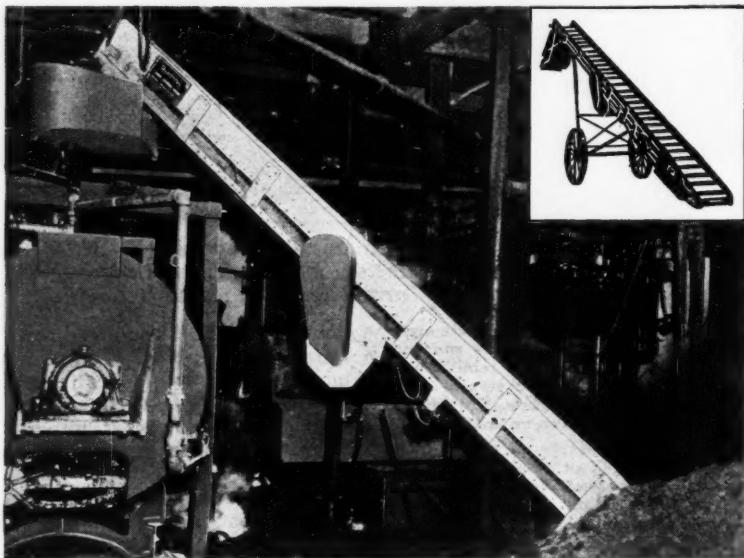
City _____ Zone _____ State _____

Circle No. 59 on Reader Service Card for more information

One in a series of factual reports from owners of Farquhar Conveyors

FARQUHAR CONVEYOR SAVES OVER 80% IN MAN-HOURS*

*at Hudson Glue Corp., Hudson, New York



After glue is made at Hudson Glue Corp., the residue is reclaimed, dried in a steam cooker and sold as fertilizer. Before installation of a Farquhar Conveyor, the residue was relayed to the cooker by three men using shovels—requiring 1½ man-hours per batch. A Farquhar Conveyor cut this relaying time to only ¼ man-hour... a saving in time of over 80%!

No matter what you want to move or where you want to move it—coal, gravel, sand, aggregates, cartons, boxes, bundles, bales, or any kind of bulk or packaged materials—horizontally or from floor to floor—Farquhar can cut your handling costs to rock bottom! One or more of the complete line of Farquhar portable, semi-permanent, or permanent conveyors will solve your handling problem. Call our engineers for consultation.

FREE! "Owners Report"
—a booklet of case histories of money-saving conveyor installations. Write: A. B. FARQUHAR CO., Conveyor Dept. E-06, 142 N. Duke St., York, Pa., or 618 W. Elm St., Chicago 10, Ill.



**WORLD'S MOST COMPLETE
CONVEYOR LINE**

A. B. FARQUHAR COMPANY Division of THE OLIVER CORPORATION

Circle No. 60 on Reader Service Card for more information

large midwestern mine. Here, vehicles (20-50 ton capacities) are equipped with trolleys which receive power from overhead lines. However, they are also equipped with batteries which supply power after the vehicles leave the limit of these lines. Batteries are charged from the power lines, during the return trip (such as an automobile battery is constantly being charged) and for longer periods during the plant's down time between the second and first shifts. (The group wondered about the effect of partial charging on battery life.)

Other types of equipment mentioned: trolley-cable types where units operate on cable and reel arrangement (such as transfer cars used in underground mining).

This type is applicable where power lines are brought to within 500-1000 ft. from the face. These cars are powered by cables attached to an outlet at the end of the power source and operated on the regular electric engines. One limiting factor is the danger of damaging cable which contacts jagged rock, etc. when threaded around curves and bends.

Problem: During the mining of bauxite, the ore is sometimes rocky, sometimes in a fine form. When the fine material gets wet, it becomes very sticky. A constant problem is to feed this ore (in its sticky form) through hoppers and chutes.

Suggested Solutions: Several suggestions were offered by the group. The use of vibrators (commonly installed for loosening semi-frozen material from hopper-bottom gondolas, and on chutes under silos) was considered. However with this type of material, it was believed vibrators would not do an adequate job, and might increase consolidation instead of relieving the condition. It was agreed, that water spray was sometimes able to resume the flow. Mechanical plungers and supersonic mechanisms, with which the group was not too familiar, were considered likely solutions. Another possible answer was the suspension of chains into hoppers, which could be manipulated to free the load. A final suggestion was the use of an arm, operating on the inside of a circular bin, and formed with chain driven teeth like a chain saw. This equipment, designed to break up the material,

**Farquhar
CONVEYORS
SAVE YOU MONEY**

P
a
c
s
w
it
co

St
ti
cu
du
pr
co
th
th
is
ma
ma
ve

vehicles equipped with power, they are which leave during (charged) during the second pondered going on

ment men- are units engagement under-

the power 100-1000 hours are to an source electric is the much con- threaded

ing of rocky, when the es very to feed through

al sug- group. only in- ten ma- mandalas, as con- type of brators ob, and instead It was s some- w. Me- ersonic group considered possible chains manip- al sug- m, op- circular driven equipment, material,

progresses around the bin through friction caused by its own drive.

PROCESS INDUSTRY

Problem: It is desirable to handle activated carbon from the kilns to the crushers by some mechanical means, such as automatic conveyors. While it would seem to be a simple problem, it was complicated by the following conditions:

1. In the line of kilns, activated carbon is manufactured in granular form in various particle sizes.
2. The conveying equipment is expected to function under continuous production—365 days a year.
3. The various meshes of carbon must reach the end of the line in an uncontaminated condition.
4. The carbon must be delivered to the crusher bins which are equipped with bucket elevators to feed further processing equipment. The automatic conveyors should be of a type that will permit the continued use of these elevators.
5. The conveyor system must deliver the product according to its originally intended form. In other words, the granular type must not be macerated or pulverized.
6. The product as delivered from the kiln becomes incandescent if exposed to air currents.
7. When delivered to the conveyor, the product would be dry but very slightly hygroscopic.
8. Ambient room temperature may be as high as 140 degree F.
9. Perhaps the greatest obstacle to be overcome is an exceedingly dusty condition, which may contaminate and render inoperative any conveying system unable to function in this atmosphere.

Suggested Solutions: Current practices were brought out during the discussion. The present system of production and handling is manual; the product accumulates into drum-type containers which are then moved to the crusher bins. Before transferring the product into the bin, its condition is checked and a production record made.

Because this method requires too many manhours, an automatic conveyance is required. It should be of

(Turn the page please)

*This NEW CONSTRUCTION
Revolutionizes Swivel Casters!*

LOCK-WELD

Built Stronger · Last Longer

**Fairbanks' great new
swivel caster**



LOCK-WELD CONSTRUCTION (patented) MEANS

NO KING PIN

completely eliminates the greatest single cause of caster failure: the king pin.

EASIER SWIVELING

double ball race held in rigid alignment. Tremendous increase in swiveling efficiency.

SUPER STRENGTH

top plate and retaining plate are projection welded into an integral unit. No wear between rigid and moving parts. Patented leg design prevents bending and buckling...disperses load over larger area.

COINED RACEWAYS • HARDENED BALL BEARINGS • PRESSURE LUBRICATION

Complete information on LOCK-WELD casters is contained in Bulletin 23-33, free on request.

THE

Fairbanks

COMPANY

393 LAFAYETTE STREET • NEW YORK 3, N.Y.

Branches:

New York 3 • Pittsburgh 25 • Boston 10 • Rome, Ga.

VALVES • DART & PIC UNIONS • TRUCKS • CASTERS

Circle No. 61 on Reader Service Card for more information

Research and Development Division



C. S. Schroeder



F. A. Vossenberg

Set Up By Maker of Material Handling Equipment

A research and development division has been established by Yale & Towne Mfg. Co. to coordinate and supplement the research and product development activities of the company's eight divisions. Gilbert W. Chapman, president of the company states that the new division will conduct "continuous and dynamic research and development of new products and improvement of existing products in the field of hardware and material handling."

Director of the research and development division will be Jere D. Buckley, a vice president of the Guaranty Trust Co. of New York since 1943.

Charles S. Schroeder, presently director of engineering at Yale & Towne's Philadelphia Division, has been appointed director of research. Frank A. Vossenberg, presently assistant director of engineering at the Philadelphia Division has been appointed assistant director of research.

a horizontal type. Its travel distance would be the length of the room, which is over 500 ft. The kilns are 21 ft. wide, and spacing between each is 5 ft. The crusher bins are located in the same room in almost a central position. Any conveyor system offered must connect all kilns to permit continuous production.

A number of suggestions were offered. One of these was the use of a zipper conveyor. A representative stated he was familiar with this type of conveyor but declared that dust would escape, and that the temperature of the delivered product made the suggestion impractical.

Other suggestions embraced the pneumatic system and other types. The most acceptable was a vibrating conveyor system, which would be partitioned and fully enclosed to prevent circulation of dust.

Problem: Production of Ammonium Nitrate involves a short cycle in ton quantities. This is produced in a room about 50 ft. long and holds eight production vats, each six ft. in diameter.

An automatic conveyor system also is desired for this operation. It would

SHIFT YOUR LOAD . . . TO DICO



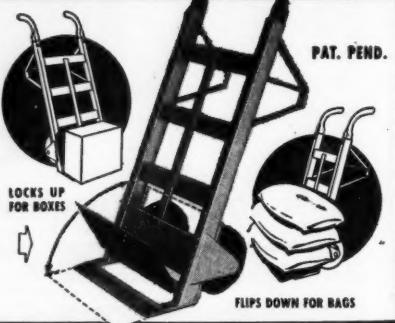
"Float-Away"
SERIES 20
Barrel and Drum Truck



SERIES
10
"Belt Mover
Truck"

SERIES 70-B & 80-B Combination Box and Bag Truck

Here's our latest addition to DICO's tested and proved line of Steel Hand Trucks...the new and exclusive Models 70-B and 80-B. It's a rugged, convenient hand truck with the advantage of 2 trucks. Snap lock holds bag plate up tightly for boxes, and foot release flips plate down for bags. 3 models with straight or curved wooden handles.



PAT. PEND.

LOCKS UP
FOR BOXES

FLIPS DOWN FOR BAGS



SERIES
60
Bag & Box
Truck



DICO
DRAIN
STANDS

90 SERIES



MODEL 90-W



MODEL 91



MODEL 92-W
"E-Z-Rock"

DICO STEEL HAND TRUCKS

MODEL 93 Combination Truck and Drain Stand



SERIES
80
Extra Heavy Duty
Warehouse and Railroad
Freight Truck



SERIES
30
Utility Truck
(Model 31 equipped with
Larger Wheels)

DICO
COMPANY

204 S. W. 16th Street — DES MOINES, IOWA

Write for FREE CATALOG...
Or see your jobber. Let us give you full information and prices on the "DICO" Steel Hand Trucks best suited to fit your particular trucking problem.

Circle No. 62 on Reader Service Card for more information

istance
which
wide,
ft. The
the same
n. Any
connect
produc-

ere of
use of a
ntitative
is type
t dust
mperature
ade the

ed the
es. The
ng con-
be par-
prevent

monium
in ton
a room
ight pro-
meter.
em also
would

!
s
-W
1
-W
1
-W

move in one direction, where the final product is to be checked and weighed, after which it is sent to the warehouse adjacent to the production room.

The principal problems and considerations for this operation are as follows:

1. The product, as delivered from the kettles, often is accompanied by undesirable hard lumps, which must be removed and returned for reprocessing.
2. The finished product is granular.
3. Discharge opening of the kettles is about 18 in. square.
4. Unloading should be confined to 10 minutes; the loading cycle within 20 min.
5. Operating conditions require vapor-proof equipment.
6. The finished product is extremely hygroscopic, which must be taken into consideration from the maintenance standpoint, as any residue will collect moisture and accelerate corrosion.

Suggested Solutions: Many suggestions were offered, among which were pneumatic systems, screw and vibrating types of conveyor systems.

The representative again was most receptive to the vibrating conveyor, saying he had already looked into that possibility.

Discussion of the application of the vibrating conveyor to this problem disclosed that when the product was dropped from kettle to conveyor, a dust condition arises. It was suggested that the discharge unit be booted under slight negative pressure.

QUARRYING INDUSTRY
Problem: Belt conveyors versus truck haulage is one of the economic problems facing the crushed stone industry. The problem was posed for an industry which produces about 250 millions tons per year of crushed stone.

Crusher stone quarries are usually located close to the market because the average price the country-over for this product is roughly \$1.80 per ton and transportation costs must be kept to a minimum. All capital expenditures for engineering improvements must be carefully scrutinized with an eye on market trends in the building industry.

The quarries generally load rock, broken by the primary blast, with shovels into trucks for haulage to the crushing and sizing plant. When op-

(Turn to page 152)



There's only one way for you to find out
what modern materials handling systems can do,
and that's to see them — in action . . .

And you can see them in action — in your own
office — on the new Lamson 16 mm. sound motion
picture, "Conveyors that Pay Dividends."

No still pictures or pages of words could possibly
tell this dynamic story. That's why we're offering
you the chance to see this film...run it yourself
...anytime...any place. You name it!

action views of Lamson installations all over the
country...results of over 72 years of applied
experience in *designing, building and installing*
material handling systems.

how modern methods can cut hidden costs, save
lost time and eliminate unnecessary motion.

how a Lamson Conveyor System becomes a
living flow chart providing an accurate picture
of product flow at any hour.

Write today. We'll send you the film or, if you prefer, we'll send a
Lamson engineer to screen it for you — no obligation, of course.

LAMSON

LAMSON CORPORATION • 1300 Lamson St., Syracuse 1, New York

I am interested in seeing your film "Conveyors that Pay Dividends."

Ship film prepaid, marked to my attention, to address below. I will return to you
prepaid after showing, and will use reasonable care in handling but assume no
responsibility beyond this.

Arrange to have the film shown here by your Field Engineer. The dates most con-
venient to me would be _____ or _____
The audience will consist of approximately _____ persons.

Name _____

Firm Name _____ Type of Business _____

Street _____ City _____ State _____ 8453

Circle No. 63 on Reader Service Card for more information

MATERIAL FACTORS FOR DETERMINING PERMANENT MAGNETIC PULLEY SIZE

Given below are the normal percentage factors to be applied to rated pulley capacities for different materials and grades of separation

MATERIAL	Pounds per Cubic Foot	Separation for Protection of Crushers	Separation for Protection of Pulverizers and Grinders	For Reclamation of Iron and Steel	For Purification	MATERIAL	Pounds per Cubic Foot	Separation for Protection of Crushers	Separation for Protection of Pulverizers and Grinders	For Reclamation of Iron and Steel	For Purification
Abrasives	125	100	75	25	25	Garbage, tankage	27	...	...	50	50
Acetates	16	...	75	25	25	Glass, batch	90	...	75	...	50
Aluminum Chips	48	...	50	...	25	Grain, average	48	...	50	...	50
Apples, green	40	75	...	50	...	Granite	96	100	...	100	50
Apples, dried	19	...	...	50	...	Gravel	120	100	...	100	50
Asbestos	64	...	75	...	25	Gypsum, large lump	90	100	...	100	50
Ashes, Coal, dry	40	...	75	100	...	Hay, loose	5	...	...	...	75
Ashes, Wood, dry	47	...	75	100	...	Hempseed	35	...	...	...	50
Bakelite	43	...	50	25	25	Iron Ore, loose	150	100	...	...	...
Baking Powder	56	...	...	15	...	Lime, ground	64	...	...	...	50
Barley	39	...	...	50	...	Limestone	96	100	...	100	50
Barytes	144	100	...	50	...	Linseed	25	...	100	...	50
Bauxite	70	100	...	50	...	Malt, dry	35	...	...	...	50
Beans, Castor	37	...	...	50	...	Manganese Ore	259	100	...	...	...
Beans, White	48	...	...	50	...	Marble	95	100	...	...	50
Blue Grass Seed	11	...	...	50	...	Oats	26	...	...	...	50
Bone, ground dry	75	...	...	50	...	Peas, dried	48	...	...	...	50
Borax	75	100	...	50	...	Peas, green	26	...	...	...	35
Bran	16	...	...	50	...	Peat, dry	30	100	...	...	...
Brass Chips	163	...	50	...	...	Phosphate, ground	75	...	75	...	75
Brick, Fire	137	100	75	...	25	Plastics	56	...	75	...	75
Buckwheat	42	...	...	30	...	Porcelain	52	...	75	...	50
Carbide	50	...	75	...	25	Potash	60	100	...	...	50
Carbon	32	...	75	...	25	Quartz	84	100	...	...	25
Carborundum	140	100	75	...	25	Resin	67	100	...	...	25
Carrots	44	...	...	75	...	Rubber, shredded scrap	46	...	...	...	25
Cement, Clinker	95	100	...	25	...	Rubber Scrap	22	...	50	...	20
Cement, Portland	100	...	...	50	...	Rye	45	...	...	...	50
Charcoal, broken	12	100	75	...	75	Salt	55	100	75	...	15
Chips, Wood	18	75	75	75	...	Saltipetre	80	...	...	...	50
Cinders	40	100	75	100	...	Sand, dry	90	...	...	...	20
Clay, loose, dry	63	100	...	25	...	Sand, wet	110	90	...	...	15
Clover Seed	48	...	...	50	...	Sand, foundry	90	50	...	...	50
Coal, lump, average	50	100	50	...	...	Sand, tempered	100	...	...	...	50
Coal, run of mine	50	100	50	...	...	Sandstone	82	100	50	...	...
Coke, lump, average	30	100	...	...	...	Sawdust	30	...	...	100	75
Copper, Ore	190	100	...	...	...	Shale	92	100	...	...	...
Copper Oxide	190	...	...	25	...	Slag, bank	80	100	50	100	...
Copra	33	50	...	50	...	Slag, honeycomb	30	100	50	100	...
Cork, dry	15	...	50	...	...	Slag, granulated	60	100	50	100	...
Corn, ear	56	...	...	75	...	Soa Chips	40	...	50	...	25
Corn, shelled	45	...	50	...	...	Soda Ash	30	...	...	...	75
Corn Meal	40	...	...	20	...	Soy Beans	28	...	100	...	75
Cotton Seed	30	...	...	50	...	Starch	35	...	100	...	75
Cracklings	40	100	100	...	...	Stone	100	100	...	100	...
Culet	96	100	...	50	...	Straw, loose	3	...	...	...	75
Earth, dry, loose	76	100	...	100	...	Sugar	50	...	75	...	25
Emery	250	100	75	...	25	Sulphur	50	100	...	...	50
Feldspar	88	100	...	75	...	Tobacco	16	...	100	...	75
Flaxseed	45	...	...	50	...	Trap Rock	107	100	75	...	...
Frit	78	...	75	...	50	Wheat	45	...	...	...	50
Fuller's Earth, dry	30	...	50	...	25	Wood Chips	22	75	75	75	...
Garbage, green	47	...	...	50	...						...

Method of Determining Pulley Sizes

EXAMPLE 1—TO DETERMINE PULLEY SIZE WITH THE FOLLOWING CONDITIONS:

MATERIAL—Bauxite

TYPE OF SEPARATION—Protection of Crusher

RATE OF OPERATION—140,000 lbs./hr.

BELT SPEED—Open

BELT WIDTH—Open

PULLEY DIAMETER—12"

From the chart of Material Factors, you find that bauxite weighs 70 lbs./cu. ft. and that the material factor is 100%, or that the pulley can be operated at its full rated capacity. Dividing 140,000 lbs./hr. by 70 lbs./cu. ft., you obtain 2000 cu. ft./hr. as the actual capacity to be handled. Since the material factor is 100%, the actual capacity and the rated capacity are the same, and by looking in the chart for a pulley 12" in diameter, you find that a 30" Belt Width is good for 1980 cu. ft./hr. (which is close enough) if operated at 50 r.p.m.

EXAMPLE 2—TO DETERMINE PULLEY SIZE WITH THE FOLLOWING CONDITIONS:

MATERIAL—Bauxite

TYPE OF SEPARATION—Purification

RATE OF OPERATION—140,000 lbs./hr.

BELT SPEED—Open

BELT WIDTH—30"

PULLEY DIAMETER—Open

From the chart of Material Factors, you find that the bauxite weighs 70 lbs./cu. ft. and that purification requires a 50% factor to be applied to the rated capacity, or that any pulley can handle only one-half of its rated capacity for this type of operation. Dividing 140,000 lbs./hr. by 70 lbs./cu. ft. you obtain 2000 cu. ft./hr. as the ACTUAL capacity to be handled. Since in this type of operation the pulley is only good for 50% of the rated capacity, you require a capacity of 2000 cu. ft. divided by .50 (which is the same as multiplying by 2), or a rated capacity of 4000 cu. ft./hr. From the chart you find that the smallest diameter pulley with a 30" Belt Width having a rated capacity of 4000 cu. ft./hr. is 18" in diameter, running at 40 r.p.m.



Handling Techniques Revealed at Packaging Show

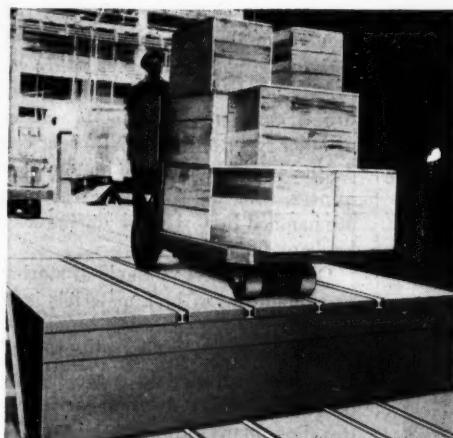
How makers of products from toothpaste to television sets can save up to 20 per cent in the cost of bringing goods to market was illustrated by two industrial truck manufacturers at the recent National Packaging Exposition in Atlantic City. Yale & Towne Mfg. Co., Philadelphia Division, and Clark Equipment Co. collaborated in a demonstration which dramatized the relationship between packaging and latest handling methods. To show clearly techniques which have been

developed for loading and unloading of common carriers, gas and electric fork trucks handled unit loads of packaged goods into and out of a simulated railroad box car and a highway truck which had been set up.

This year marked the first time that manufacturers of material handling equipment participated in the National Packaging Exposition sponsored by The American Management Association. In discussing the event, Elmer F. Twyman, president of Yale & Towne commented that it formalized "an integration of two basic aspects of distribution—packaging and handling . . . a marriage of modern . . . techniques (which) is bringing about substantial cost reductions in distribution which can be passed on to consumers."

GLOBE Ramp Eliminator

Keeps Plant Traffic on the Level



A Globe Ramp Eliminator averts the dangers of make-shift gangplanks and provides safe, dependable, and fast vertical transportation between levels. This means less risk of damage to materials or injury to workers.

With a Globe Ramp Eliminator, movement of materials always is across a sturdy, safe, level platform instead of up or down steep or temporary makeshifts. This adds up to safer, faster, easier, and cheaper handling of goods.

GIVE YOUR BUSINESS A LIFT!

A Globe OILIFT will help you make the most of your manpower... speed production, save you money, help eliminate damage to materials and injury to workers. Write today for valuable information on Self-Leveling Ramps, Machine Loading Lifts, Industrial Truck Service Lifts, Production Lifts, etc. Ask for Bulletin E-437.

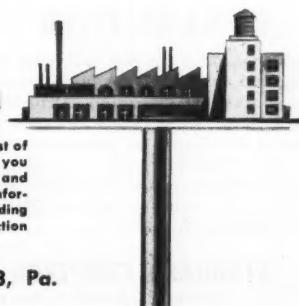
GLOBE

THE BEST LIFT

GLOBE HOIST COMPANY - 1900 E. Mermaid Lane, Philadelphia 18, Pa.

(Factories at Des Moines, Iowa and Philadelphia, Pa.)

Circle No. 64 on Reader Service Card for more information



**MODERN TIME and
COST SAVERS BUILT BY...**



"Power-Package" unit for roller and belt conveyors

HANDIDRIVE

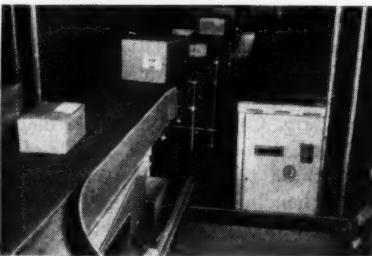
These self-contained drive units provide tractive power for any gravity conveyor — belt or roller — convert present gravity conveyors to live or powered belt or roller — quickly at low cost.

Can be used as extensions to present conveyors, as individual conveyor units, or to build a complete flow system of belt, line roller, and gravity conveyors. Flexible and adaptable. Write for Bulletin 63-B, address Dept. FL-62



Save time loading-unloading with the E-X-T-E-N-D-O-V-E-Y-O-R

This compact, mobile, easily maneuverable power-belt conveyor unit extends to 46 ft. in either direction and retracts to 9 ft. 10 in. Reaches into cars, trucks, trailers. Handles boxes, bags, bundles, cartons, crates, cases weighing up to 150 lbs. Available in two models — 1 way stretch and 2 way stretch — and 5 sizes. Write for Extendoveyor Bulletin — address Dept. FL-62



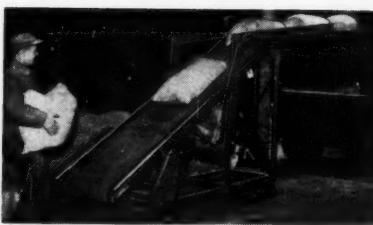
Lift or Lower-floor to floor-or convey horizontally ...with a Standard UTILITY BELT-VEYOR

Move boxes — cartons — crates — sacks and bundles from basement to first floor, or any floor to floor, or convey in a straight line — continuously with the Standard UTILITY BELT-VEYOR. A compact, pre-engineered unit, easy to install (over existing stairways where practical) handles commodities up to 150 lbs. — available in 4 belt widths — 10, 14, 20 and 24 inch — and equipped with adjustable guard rails to facilitate handling packages wider than belt. Electric motor operated. Write for Bulletin 63B. Address Dept. FL-62



Load-Unload-stack-or elevate...with the HANDIPILER

—designed for loading, unloading, stacking and elevating sacks, boxes, cases and cartons. Reversible apron — conveys up or down. Built in 14 and 24 inch widths; boom is designed to pile cartons up to 17 ft. — sacks to 12 ft. — projects into cars, trucks, trailers. Handles commodities up to 135 lbs. Write for Bulletin 63B — Address Dept. FL-62



STANDARD CONVEYOR COMPANY

General Offices: North St. Paul 9, Minnesota
Sales and Service in Principal Cities

Send for Standard
Bulletin 63B describ-
ing the above and
other portable con-
veyor units.



Circle No. 65 on Reader Service Card for more information

UNLOADING & STORING . . . (Continued from page 63)

use of a large blade attached to powered winch. An operator guides the blade inside the carrier drawing the material to the doorway so that it spills into a pit or hopper and is conveyed to the plant.

Many plants use a short section of powered belt conveyor, often described as an undercar unloader. This conveyor is placed in a pit under the bottom of the hopper car and receives the material, transferring it to other carriers or to longer belt conveyors. One Cleveland building block manufacturer has installed an intricate system of belts which all receive their loads from a portable belt unloader and transfer the bulk material to various stockpiles located all over the yard.

How Industrial Trucks Are Used For Unloading

Fork trucks, equipped with scoop attachments, or front-end scoop trucks are also widely used from unloading box cars. Normally, they transfer to conveyors, to bulk containers or directly to stockpiles or other storage facilities. Front-end scoop trucks are designed expressly for handling such loads. All do an effective job.

Many times, bulk materials are received in containers which are either designed for overhead or fork truck handling or which are palletized and handled similarly. Whether your loads arrive in containers designed expressly for this purpose, or in barrels, drums, cans, etc., fork trucks, walkies or other types of industrial trucks can do the job. Special drop-bottom containers, some of which are castered, are handled by fork truck during long hauls or for dumping.

One of the best methods of storing vast quantities of bulk materials is in silos. Usually, pneumatic conveyors, bucket elevators or some other type of conveyance is used to move the incoming loads directly from carriers to the silos. Many times, the storage facilities are emptied by gravity onto belt conveyors, etc.

When materials are stored in the yard, drag scrapers, tractors, mobile or bridge cranes are used for storage or reclaiming purposes. More data on this aspect of bulk handling may be found in the section "Handling Bulk Materials In The Yard."

**HANDLING AND
PACKAGING
DATA SHEET**

Reprinted From
The 1952-53 FLOW DIRECTORY

WEIGHTS, ANGLES OF REPOSE AND OPERATING ANGLES OF VARIOUS MATERIALS

(A-Weight, lbs/cu. ft., B-Angle of Repose, C-Maximum Operating Angle)

MATERIAL	A	B	C	MATERIAL	A	B	C
Alumina, sized or briquette	65	22°	10°	Kaolin, green crushed	64	35°	19°
Aluminum Hydrate, ground	13½	34°	24°	Kaolin, pulverized	22	45°	32°
Aluminum Sulphate, granular	54	32°	15°	Lead, #70 red	230	40°	31°
Ash, black, ground	105	27°	15°	Lead, Silicate granulated	230	30°	15°
Ash, fly, powdered	45	42°	30°	Lead, Sulphate, basic pulverized	184	45°	32°
Ashes, wet	47	50°	38°	Lime, Briquette	60	26°	15°
Ashes, dry	38	40°	27°	Lime, burned pebble (sized)	53	30°	17°
Bauxite, ground dried	68	35°	23°	Lime, burned pulverized	27	43°	29°
Bauxite, mine run	85	31°	17°	Lime, fine (spent dry carbide)	45	40°	26°
Beans, soy-cake	45	32°	18°	Lime, Mason	17	40°	27°
Beans, soy-meal	40	27°	14°	Lime, Hydrated		42°	30°
Beans, soy-crushed	34	35°	22°	Limestone, pulverized	85	47°	34°
Beans, soy-whole	47	22°	7°	Limestone, mixed sized	105	35°	21°
Beans, soy-split	44	25°	10°	Limestone, coarse, sized	98	25°	12°
Buckwheat	34½	25°	13°	Linseed Meal	27	34°	20°
Barley	39	48°	35°	Linseed, rolled	25	34°	20°
Carbon, coke, crushed, sized	30	28°	13°	Mica, ground	13½	36°	23°
Cement, clinker	88	33°	20°	Molybdenum Ore, powdered	107	40°	25°
Cement, Portland	95	39°	28°	Manganese	460	39°	24°
Charcoal, Wood, Pulp granular	26½	35°	25°	Nitrate of Soda	68	24°	10°
Chips, Wood	22	36°	25°	Oats, (32 lbs. per bu.)	26	21°	8°
Chromide Acid, flake	.75	25°	13°	Phosphate, Dicalcium, granular	60	30°	17°
Cinders, (Coal, Ashes & Clinkers)	42	35°	23°	Phosphate, Super, ground	51	45°	30°
Cinders, Blast furnace	57	35°	23°	Phosphate, Tri-Sodium granular	60	26°	13°
Clay, dry in lump loose		35°	21°	Phosphate, Tri-Sodium pulverized	50	40°	29°
Clay, Blended for tile 11% moist	45	45°	31°	Phosphate, Florida	93	27°	14°
Clay, ground		35°	22°	Phthalic Anhydride, flakey	42	24°	10°
Clay, gray, granular		35°	20°	Pitch, flake	42	27°	13°
Coal, Anthracite, broken, loose	54	22°	8°	Rice	50	20°	8°
Coal, Anthracite, Chestnut	46	22°	8°	Rock, Phosphate, pulverized	60	40°	28°
Coal, Bituminous, Minus ¼", dry	42	29°	15°	Rubber, scrap (ground)	23	35°	22°
Coal, Bituminous, Minus ¼", wet	50	40°	25°	Rye (56 lbs. per bu.)	45	32°	18°
Coal, Bituminous, Minus ¼" very wet	55	33°	20°	Salt, cake	76	36°	21°
Coal, Bituminous sized, wet or dry	45	27°	14°	Salt, granulated	81	31°	16°
Copra, medium size pieces	33	20°	9°	Salt rock, crushed	75	25°	11°
Copra, meal, ground	40	39°	25°	Sand, mine run	95	35°	21°
Copra, expeller cake ground	32	30°	16°	Sand, coarse sized	95	30°	16°
Copra, expeller cake chopped	29	20°	8°	Sand, very fine	95	32°	18°
Copper Sulphate, ground	75	31°	17°	Sand, core	65	39°	27°
Clover seed (60 lbs. per bu.)	48	28°	15°	Sand, voids full of water		45°	33°
Cocoanut Shredded	25	27°	15°	Slag, furnace granulated	122	25°	13°
Coffee Beans, Green	42	25°	10°	Slag, Birmingham	82	25°	13°
Coffee, Steel Cut	28	23°	10°	Slate, fine ground	82	35°	22°
Corn Shelled (56 lbs. per bu.)	45	21°	7°	Slate, granules flakey	87	28°	15°
Cornmeal (50 lbs. per bu.)	40	35°	22°	Soap Chips	10	30°	18°
Cotton Seed	25	29°	19°	Soda Ash light	30	37°	25°
Cotton Seed Meal	33	35°	22°	Soda Ash dense	66	32°	19°
Earth, Fullers, Raw	42	35°	21°	Soda Ash Briquette	50	22°	10°
Earth, Common Loam dry loose	76	35°	20°	Soda, Bicarbonate	43	42°	27°
Feldspar, crushed	100	32°	17°	Sodium Nitrate, granular	68	24°	11°
Flax Seed (56 lbs. per bu.)	45	21°	8°	Sodium Sulfate, (fine and lumps)	88	31°	18°
Glue (Pellet)	45	25°	11°	Starch Tablet granular crystals	40	24°	12°
Gravel, sharp		40°	27°	Sulphur, pulverized	50	45°	30°
Gravel, round		30°	15°	Sulphur, coarse	76	32°	20°
Green stone, trap, loose piles	107	35°	21°	Sawdust, drip	20	36°	22°
Gypsum	142	45°	33°	Sawdust, ground	20	45°	31°
Gypsum in regular lumps	82	30°	15°	Shale	85	39°	26°
Gypsum ground	56	40°	27°	Wheat (60 lbs. per bu.)	48	23°	10°
Iron Oxide Pigment	25	40°	27°	Zinc ore roasted granular	110	38°	27°
Iron Ore Limonite	237	40°	28°				
Iron Ore soft		35°	21°				

G . . .
53)
ached to
uides the
wing the
o that it
d is con-

ection of
described
his con-
the bot-
eives the
ther car-
ors. One
ufacturer
ystem of
air loads
der and
various
yard.

h scoop
op trucks
nloading
transfer to
s or di-
storage
ucks are
ng such
s are re-
re either
ark truck
ized and
ur loads
ed ex-
barrels,
walkies
ucks can
om con-
eastered,
ng long

storing
als is in
veyors,
type of
the in-
rriers to
rage fa-
tly onto

in the
mobile
storage
data on
may be
ng Bulk

What's NEW in useful literature

Free

The publications featured on these pages were written by experts. They are FREE publications. To obtain them use the postcard bound into this issue.

Vibrating Spreader Feeder

A vibrating spreader feeder for providing a continuous curtain of such bulk materials as roofing, granules, calcium chloride, nut meats, etc., is described in a bulletin offered by Syntron Co. The feeder is made up with a flat pan trough having a diagonal slot and powered by a single electromagnet drive. Vibratory action flows the material out along the trough. Rate of feed is controllable.

Circle No. 205 on Reader Service Card for more information

Truck Cranes

Many time saving and cost cutting applications for Ruger truck cranes are illustrated in a new four-page folder. Complete specifications for three models, (TM $\frac{1}{2}$ —1000 lb. capacity; TM1—2000 lb. capacity; TM2—4000 lb. capacity) are given.

Circle No. 206 on Reader Service Card for more information

Overload Cut-Outs

The Anchor-Waldron Cut-Out is an automatic, positive, mechanical, electrical and controlled device which shuts off motor when an overload occurs. It resets automatically. These points are covered in bulletin #51 of John Waldron Corp., Coupling Division.

Circle No. 207 on Reader Service Card for more information

Shovels, Cranes, Draglines

Link-Belt Speeder Corp. has issued a general line catalog which provides a digest of all its current models of shovels, cranes and draglines. In addition to photographs and brief descriptions and applications of sixteen models, it also contains a listing of books which contain complete data on each model.

Circle No. 208 on Reader Service Card for more information

Tractor Maintenance Guide

Much of the life in your diesel tractor depends on you, according to Caterpillar's new "Maintenance Guide for Track-Type Tractors." It uses four-color cartoons to illustrate each point covered.

Circle No. 209 on Reader Service Card for more information

Valves

General specifications of Fairbanks gate, globe and check valves are contained in a circular from Fairbanks Co. Cutaway illustrations show construction and use of the various valves.

Circle No. 210 on Reader Service Card for more information

Fork Trucks

Two models of Buda fork trucks are covered in bulletin 1581 of The Buda Co. The FT 40-24 (gasoline powered), and the FTD 40-24 (Diesel powered), are both heavy-duty models with 4000 lb. capacity at 24 in. load center. Engineering details are given.

Circle No. 211 on Reader Service Card for more information

Belting

Important features and facts about Buffalo Belting are included in a new folder. Illustrated are: untreated belt, paraffin treated, asphaltum treated, latex treated, plastex belting, glazed belting, and rubber filled and covered belting. Prices are given in many cases.

Circle No. 212 on Reader Service Card for more information

Crane Cab Coolers

Comfortable working conditions and clean pure air under virtually all atmospheric and temperature variations are made possible with Dravo Crane Cab Coolers and conditioners. Bulletin 1301 tells the details.

Circle No. 213 on Reader Service Card for more information

Electrical Maintenance Booklet

A 24-page booklet describing a complete maintenance service for electrical apparatus can be obtained from the Westinghouse Electric Corp. Photographs show special skill, testing devices, and repair equipment which are available to the company's customers.

Circle No. 214 on Reader Service Card for more information

under the trade name of Supertex, this belt is described as being odorless, tasteless, non-toxic, washable, oil proof and water proof. It is also said to be resistant to acids, alkalies and heat.

Circle No. 222 on Reader Service Card

production departments? TelAutograph Corp. thinks that you might find a solution through use of the TelAutograph. It is said to be lightning fast, and since written records are had of all messages, there is little chance for error. Literature is available.

Circle No. 224 on Reader Service Card

and a telescopic model which elevates to 108 in. Contained are drawings suggesting common applications and photographs showing actual on-the-job uses. Line drawings show all dimensions, and specifications are described in detail.

Circle No. 226 on Reader Service Card

Variable Timer

A mechanical timer to control the timing of all types of electrical, mechanical, air and hydraulic movements is the subject of a data sheet you can get from Rapp Package Machinery Co. Among the applications recommended are intermittent conveyor movements, packaging equipment, and liquid flow measurements. The unit operates on 110 volt A.C. current with a small fractional horsepower motor.

Circle No. 223 on Reader Service Card

Counting Devices

A catalog of mechanical and electric counters in many sizes and types has been published by Production Instrument Co. Included are automatic batch counters, photo-electric counting units, counter actuating switches, high speed revolution counters.

Circle No. 225 on Reader Service Card

Written Intercom Messages

Do you have a bottleneck that holds back raw materials and parts from

General Catalog

American Hoist & Derrick Co. has published a catalog which covers all equipment from its giant revolver cranes, through its extensive line of locomotive cranes, hoists, material elevators, car pullers and down to its small wire rope clips. Included with the catalog is a return card which makes it easy for you to send for specific literature on equipment in which you are interested.

Circle No. 227 on Reader Service Card

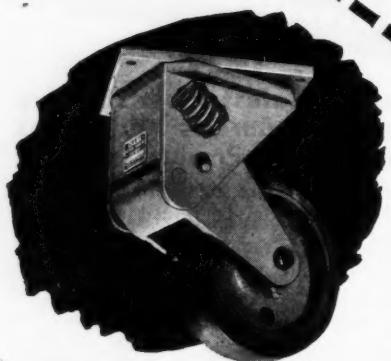
High Lift Truck

A 1000 lb. capacity lift truck is described in a new bulletin being distributed by The Raymond Corp. The truck is offered in a non-telescopic model having a 60-in. elevated height

Chain

The S. G. Taylor Chain Co. has prepared a booklet on the care, use

Clark DUOFLEX KNEE ACTION CASTERS HIGH DEFLECTION WITHOUT BOUNCING



- DAMPING PROPORTIONAL TO LOAD AND SHOCKS
- FULLY ENCLOSED SPRINGS
- ONE PIECE KNEE ACTION

SAVES
LOADS - TRUCKS
TIRES - FLOORS



- LIFETIME LUBRICATION OF KNEE ACTION
- FABRICATED CONSTRUCTION
- MECHANICAL ACTION STOPS

THIS NEW KNEE ACTION DESIGN IS SHOCK ABSORBING AS WELL AS SHOCK PROTECTING.
MAINTAINS WHEEL TO FLOOR CONTACT—PREVENTS "FISH-TAILING".



ALL STEEL WELDED TRUCK CO.
ROCKFORD, ILLINOIS

Circle No. 68 on Reader Service Card for more information

elevates
rawings
ons and
on-the-
y all di-
are de-

ee Card

Co. has
vers all
revolver
line of
material
own to its
led with
d which
send for
ment in

ee Card

Co. has
care, use

RS
ING



N DE-
SERBING
PRO-
FLOOR
FISH-

O.
IS

• FLOW

and inspection of TM Alloy Steel Chain. This heat-treated chain is recommended for slings, equipped with hooks, end links, center links, and similar material handling devices.

Circle No. 228 on Reader Service Card

Centrifugal Pumps

Two instruction booklets covering the installation, operation and repair of its single-stage, single-suction and multi-stage centrifugal pumps have been released by Allis-Chalmers Mfg. Co. The booklets recommend that regular inspection be followed and each carries a page on which the user can keep a maintenance record of his pump.

Circle No. 229 on Reader Service Card

4-Rope Buckets

Users of overhead or bridge type cranes with 4-rope bucket trolleys will probably be interested in a 44-page bulletin published by Blaw-Knox Co. It features a list of ten vital items for guidance of a prospective user. Numerous illustrations of bulk material handling including coal, ores, chemicals, etc. are included.

Circle No. 230 on Reader Service Card

Belt Repairing Compound

Information on Magic-Vulc plastic rubber for repairing conveyor belts is contained in a folder being distributed by Magic Chemical Co. No heat or special machinery is required to apply the material, and no previous experience is necessary. Renovated belt is said to be ready for use after standing only 12 hours.

Circle No. 231 on Reader Service Card

Pressure Sensitive Tape

Behr-Manning division of Norton Co. says that you will find 1001 uses for Behr-cat masking tape. Literature you can get tells how this pressure-sensitive tape can help relieve your inventory problems and improve your purchasing position.

Circle No. 232 on Reader Service Card

90° Butt Spur

Metzgar Co. has published a data sheet covering its 90° butt spur for roller conveyors. The unit is available in either a stationary or moveable model for diverting off live roller conveyors, or for feeding onto them.

Circle No. 233 on Reader Service Card

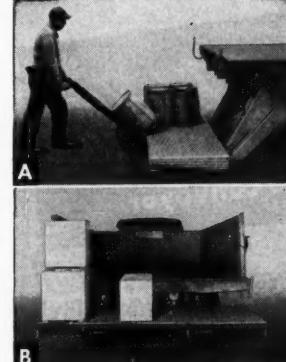
of vat dumpers made by Materials Transportation Co., according to literature you can get. The literature shows many places where the dumpers are already in use for dumping squares, hams, etc.

Circle No. 234 on Reader Service Card

Stackers

A brochure on its "101" Transtacker electric-propelled driver-led industrial trucks for lifting, moving, and stack-

SAVES MANPOWER cuts loading costs!



Here's the best answer ever devised for saving manpower and cutting costs in lifting loads on or off truck platforms. Rugged, hydraulically operated Hercules Load-N-Gate permits easy one-man handling of loads up to 2000 pounds. Platform "locks" at any desired height. In lowest position, platform matches height of hand truck (photo A). Twin lifting rams under platform prevent strains even in lifting off-center loads (photo B). Four standard platform sizes. Easily installed.



MAIL THIS COUPON FOR THE FACTS

NAME _____ TITLE _____

ADDRESS _____

CITY _____ STATE _____

DEPT. 608



Circle No. 69 on Reader Service Card for more information

ing materials, was recently published by the Automatic Transportation Co. The booklet, in color, describes in words and photos, the features of the full line of Transtackers, including platform, open faced pallet, suspended load, and straddle type pallet units.

Circle No. 235 on Reader Service Card

Trucks, Casters, Skids

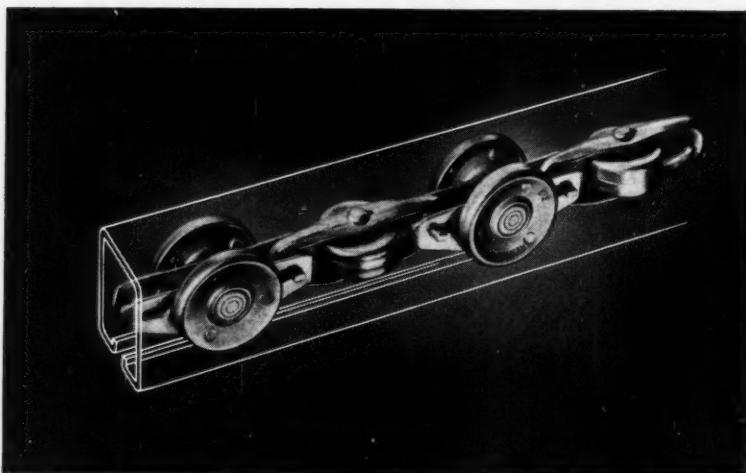
Many of the wide selection of items in the Lansing line of material han-

dling equipment are illustrated in a new folder just published. In this folder you will see photographs of equipment in service 25 years, 30 years, and even 35 years. Each item shown is still going strong in day-to-day operation.

Circle No. 236 on Reader Service Card

Hydraulic Lift

Literature on a lifting device which is said to greatly simplify the task of positioning material at machines is of-



Chain your costs down

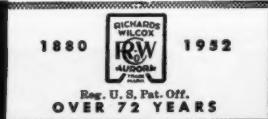


Richards-Wilcox "Zig-Zag" Continuous Power Conveyor is a specially constructed, motor-driven chain that travels through a steel, tube-like track. The unit is continuous; travels up and down, in and around, anywhere in the plant; carrying loads up to 125 pounds at all speeds from 1 inch to 60 feet per minute. Installation is easy and inexpensive, and may be quickly adapted to conform to plant alterations. Among its major advantages, "Zig-Zag" puts "dead" space to work—releases personnel for other duties—increases efficiency and keeps costs down.

Write for complete information, or contact your nearest Richards-Wilcox engineering office for consultation at no obligation.

Your best buy for economy and flexibility!

- Horizontal and vertical units alternate in a continuous chain traveling through special steel tubing.
- Complete flexibility for installation in any plant. Easily installed, easily changeable to conform to plant alterations.
- SAFE—all moving parts are fully enclosed.
- Low first costs—low power factor.
- Standard horizontal and vertical curves—two-foot radius.



ferred by Lange Aviation Corp. Called the Lange Lift, the device can be had with wheels for easy moving from one job to another, or it can be had without wheels to set flat on the floor, or below the floor. Available in capacities up to 30,000 lb.

Circle No. 237 on Reader Service Card

Belt Conveyor

The Belt Handy-Handler, a light-weight, multi-purpose conveyor for general factory use is the subject of a four-page booklet offered by Belt Corp. The conveyor is 16 ft. long, has a four-ft. extension section which increases length to 20 ft. Standard 16 ft. model weighs approximately 160 lb. Power unit slides off to reduce weight of conveyor to 97 lb.

Circle No. 238 on Reader Service Card

Vibratory Handling Equipment

Syntron Co. has published a 150 page information-packed book covering all of its vibratory material handling equipment and power tools. The book is a complete, thorough presentation of this company's many products. In every case, pictures of the products in action are accompanied with dimensions and specifications. A glance at the table of contents reveals titles like "Bag Weighing Machines, Bin Vibrators, Feeder Machines, Vibrating Packers, Spreader Feeders, Weigh Feeders, and a host of others. This literature will be a valuable addition to any industrial library.

Circle No. 239 on Reader Service Card

Swivel Caster

Specifications and descriptions of Faultless Caster models are offered to you by Faultless Caster Corp. Explained are the durable, long-lasting spring and draw bars, and double ball bearing swivel plate.

Circle No. 240 on Reader Service Card

Pallets

Seven different types of pallets are illustrated in literature offered by

Called
be had
om one
d with
oor, or
capac-

Card

Grasty Pallet Co. Standard pallets, cargo pallets, wing pallets, single face pallets and four-way pallets are included.

Circle No. 241 on Reader Service Card

Steel Strapping

Interesting, information-packed stories on the use of steel strapping in various plants are contained in The Signode Seal. This publication of the Signode Steel Strapping Co. features case studies with an emphasis on photographs. You can get on the mailing list.

Circle No. 242 on Reader Service Card

Bin Level Indicators

The Bin-Dicator Co. has published a catalog describing and illustrating its complete line of bin level indicators. The indicators are used to indicate the level of granular and pulverized materials stored in tanks, silos, hoppers and bins. The units also activate various types of signals if required, and can be used to start and stop loading and filling machinery.

Circle No. 243 on Reader Service Card

Hand Trucks

A twelve-page condensed truck catalog has been released by the Howe Scale Co. Specifications and illustrations are shown for the complete line of the latest Howe two and four-wheel hand trucks, trailer trucks, baggage wagons, platform skids, dollies, lift jack systems, wheels, casters and molded-on rubber tired wheels.

Circle No. 244 on Reader Service Card

Powered Wheelbarrow

Low cost material handling with Moto-Bugs is pictorially shown in a new four-page bulletin issued by the Kwik-Mix Co. The catalog contains 25 action photos that demonstrate Moto-Bug operation in construction, industry and maintenance work with 10 cu. ft. hopper body; in shipping, building

and manufacturing work with 1500 lb. platform body; in freight depots, factories and receiving docks with the 1000 lb. hydraulic fork lift attachment.

Circle No. 245 on Reader Service Card

Steel Conveyor Belts

Conveyor belts for handling food, bakery products, candy, ceramics, chemicals, foundry materials and all

types of loose materials are described in a bulletin from Sandvik Steel Inc. The steel conveyor belts are shown in all types of industries. A table of standard sizes is included.

Circle No. 246 on Reader Service Card

Scapers

Scrapers, and several earthmoving attachments are illustrated by Caterpillar Co. in a broadside they want to

ANTHONY "LIFT GATES"
THE STANDARD OF COMPARISON
NO OTHER CAN MATCH THE
DURABILITY, RELIABILITY AND UTILITY
OF ANTHONY LIFT GATES—at any price!

Why

More Anthony Lift Gates are purchased than all others combined!

ANTHONY LIFT GATE HYDRAULIC Weight savings add payload and economy.

ANTHONY LIFT GATE HYDRAULIC Simplicity through up to 75% fewer working parts.

ANTHONY LIFT GATE HYDRAULIC Greater safety to load and operator through specific features.

ANTHONY LIFT GATE HYDRAULIC Instantaneous finger tip control at any level, even with maximum load.

ANTHONY LIFT GATE HYDRAULIC Power with extra reserve from 5" ID cylinder to handle the most unusual type of load.

ANTHONY LIFT GATE HYDRAULIC A choice of gate types and sizes all with power closing of your selection.

RAMP TYPE Gate for wheel-on loadings at ground level. Simplicity is the reason 8 of 10 elevating tail gates you see are Anthony Lift Gates.

"PICK-UP" TYPE for 1/2 and 3/4 ton trucks—Hydraulic power. Speed, durability and simplicity identify Anthony Lift Gate.

YOUR CHOICE OF POWERED CLOSING
HYDRAULIC POWER Closing (top)—a flip of a lever closes it.
SPRING POWERED Closing (bottom)—a flip of the hand does it.

FITS ANY MAKE OF BODY
NATIONAL DISTRIBUTION
SALES and SERVICE

Circle No. 71 on Reader Service Card for more information

FLOW

send to you. The No. 10 scraper is for use with the DW10 Tractor and has a capacity of seven cu. yd. struck, nine cu. yd. heaped. The No. 15 is for use with the DW 10 tractor and has a 10 cu. yd. struck capacity, and 12.5 cu. yd. heaped. Both can be enlarged through the use of top extensions.

Circle No. 247 on Reader Service Card

Powered Sweeper

Dual Brushes arranged in tandem

and operating in opposite directions are the important feature of the Moto-Sweeper of Moto-Mower Co. This feature and many others are included in a four-page folder you can get.

Circle No. 248 on Reader Service Card

Conveyor-Elevator

A 28-page booklet published by Link-Belt Corp. contains photographs and describes Bulk-Flo conveyors and elevators. It contains photos in a wide variety of applications, together with

typical layout drawings, engineering data, calculation tables, charts and formulas. In addition over 150 materials are analyzed for average weight and such characteristics as size, flowability and abrasiveness.

Circle No. 249 on Reader Service Card

Furnace Loader

Increased production, higher efficiency, and safer operation are said to be some of the benefits which result from using Man-O-Steel heat treat furnace loaders. A four-page bulletin from Michigan Crane and Conveyor Co. gives all the details.

Circle No. 250 on Reader Service Card

Protection Against Moisture

Bothered by unwanted moisture in your warehouse or plant? Bulletin 216 of Pittsburgh Lectrodryer Corp. tells how its Lectrodryer makes operations independent of humidity changes outside. Steel can be stored without protective grease coating, candy making can be quickened with improved results, and any process affected by moisture can be helped by this dryer.

Circle No. 251 on Reader Service Card

Pneumatic Conveyors

Bulk material handling with Dracco Airstream Pneumatic conveyors is explained in bulletin No. 529 of Dracco Corp. Several uses for the conveyors are shown and explained. A section of the booklet deals with accessories which are available for the conveyors.

Circle No. 252 on Reader Service Card

Belt Conveyors

"How to Save Money Moving Materials . ." is the title of a folder offered by Lippman Engineering Works. Photographs show many types of conveyors in a variety of industries.

Circle No. 253 on Reader Service Card

Overload Release

Full information of the Tri-Matic Overload Release is contained in Bulletin A-616 of Dodge Mfg. Corp. The bulletin included engineering data and list prices.

Circle No. 254 on Reader Service Card

CHRISTENSEN'S the most complete line of loading ramps

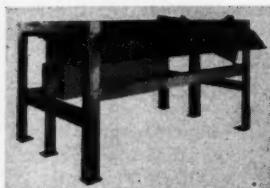


EASYLOAD TRANSFER PLATES are manually operated, rest flush within the floor when not in use. Four standard sizes with capacities from 3500 to 15,000 lb.

To Speed Your Truck and Rail Loading and Unloading Operations

Whether your operations call for a permanent loading ramp built into your dock, or a portable, lightweight plate which can be moved around, there is a wide range of models to meet your needs. Our complete line stands ready to match every problem, and every pocketbook too. All models have the same advanced engineering design, built for long life and rough usage. Their low maintenance requirements is another factor that is mighty important to all plants these days.

For complete details on any or all models, write us today.



FLOATING DOCK is operated by a counterbalance. It is an inexpensive, self-contained unit; capacity 15,000 lb.



4-WAY HYDRAULIC LOADING RAMP is self-contained, has 4-way movement, up, down, in and out. Two models have 10-ton capacities each.



UNIVERSAL PLATES are portable for car loading and unusual truck loading operations. A complete range of sizes and capacities are available.

Wm. Christensen Co., Inc.

DEPT. FS • YORK • PENNSYLVANIA

400 SOUTH SHERMAN ST.

YORK, PENNSYLVANIA

Circle No. 72 on Reader Service Card for more information

ering
and for-
aterials
ight and
flow-

Card

er ef-
re said
ich re-
at treat
bulletin
veyor

Card

ture in
Bulletin
Corp.
operations
without
y mak-
proved
ited by
dryer.

Card

Dracco
ors is
f Dracco
veyors
section
ssories
veyors.

Card

g Mate-
der of
Works.
of con-
ies.

Card

i-Matic
in Bul-
rp. The
ata and

Card

FLOW

ASSOCIATION NEWS . . .

(Continued from page 14)

Sept. 11-14. Announcement was made by G. Radcliffe Stevens, Institute president, who is president of Elgin Mfg. Co.



K. I. Oxenrider, A. G. Erdman,
Paul E. Robidoux, John Bayuk

• A material handling show and fork truck rodeo will be sponsored on June 10 by the Connecticut Valley Material Handling Society. The society, composed of members from the Springfield, Hartford, New Haven, Waterbury and Bridgeport areas will hold the event at the New Haven Arena, New Haven, Connecticut. Built around the slogan, "Last Frontier for Cost Reduction", thirty-five exhibit areas will house the latest in fork truck and material handling equipment. An all-day competition for industrial fork truck drivers in two classes, gas and electric, to which one-half of the arena will be devoted is also planned. It will highlight the skill of the individual operators in safety and maneuverability. An obstacle course, as well as stressing of best methods in standard procedures, will be scored on a point basis, with the winners receiving defense bonds, and sponsoring industrial companies companies plaques and cups. General chairman is John Bayuk, plant engineer, Jenkins Bros., Bridgeport, and Ray L. Smith of the C. E. Reutter Corp., New Haven, is rodeo director. Other committees and chairmen are: rodeo treasurer, Irving Kimball, Springfield; rodeo manager, A. D. Bowman, Waterbury; rodeo committee chairmen Al Erdman, Springfield, and Hugo Wernstrom, Hamden; exhibit committee chairmen, Paul Robidoux, Hartford, and Frank Griesing, New Haven; entries committee chairmen, John Richardson, and William Stoloff, Hartford; affiliated organiza-

tions chairmen, Ken Oxendider, Henry Trojanoski, Bridgeport; publicity chairman, Arthur R. Wiley, Chicopee.

• The 53rd annual meeting of the National Wooden Box Association was held recently in New Orleans. Discussions with Department of Defense officers and representatives from operator-contractor managed ordnance plants regarding procurement and production of nailed wooden boxes and election of officers highlighted the meeting. H. H. Pein, Pein Box Co.

Oregon, Ltd., Portland, presided over the sessions until the election of his successor, D. A. McNeill, Jr., McNeil, Nauff & McNeill, Thomson, Georgia. Other officers elected were: R. F. Miles, Rathborne, Hair & Ridgway Box Co.,—first vice president; Morris Milbank, Rouge River Box Co.—second vice president; Leslie J. Chaffee, Chaffee Brothers Co.,—third vice president. Re-elected were executive vice president—C. D. Hudson, and treasurer—P. J. Galbraith of John Galbraith.

THIS IS ONE PLACE IN YOUR PLANT FOR PRIME-MOVER

This view of Prime-Mover in a Midwest malleable iron foundry shows a bulk-handling operation on which the machine paid for itself in 60 days. Carries 1500 lbs. a trip without fatigue to operator. The bucket can be replaced with a large platform in several minutes, if desired.



MATERIALS HANDLING MEN:

P-M is a New Bulk-Handling Method!

PRIME-MOVER is designed and is used to expedite and make easier the handling of bulk material. It is the new method of stopping waste on jobs that are performed by hand or by other slow laborious means.

PRIME-MOVER is the original powered wheelbarrow that supplements and completes your mechanization of materials

handling operations. It is not intended to replace large powered lifts or other production line equipment. PRIME-MOVER has the capacity and the power to do a big day's work at a savings in man hours and money . . . on many odd jobs around a busy plant. Specification data and other information to help you buy are available on request.



THE PRIME-MOVER CO., Muscatine, Iowa



Circle No. 73 on Reader Service Card for more information

MEN IN THE NEWS . . .

(Continued from page 25)

vise the sale and distribution of Unistrut products in the eastern district, and will maintain his office at Unistrut Eastern Service Co., 74 Woolsey Street, Irvington, N. J.

. . . at Chain Belt Co.

The newly created position of vice-president & manager of Milwaukee

operations is **W. J. Sparling**. He will have executive responsibility for the three major Milwaukee divisions; construction machinery, chain and power transmission, and conveyor and process equipment. **M. G. Jewett** has been appointed manager, chain & power transmission division. **B. F. Devine**, vice president and manager of the construction and machinery division has been made a staff officer of the company and will serve it in an advisory and consulting capacity. **A. K. Thomas** has been appointed manager of the construction machin-

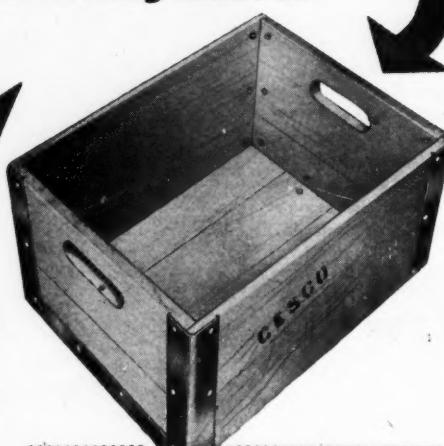
ery division. **W. A. Clayton** has been made sales manager of the construction machinery division. **J. W. Lendved** has been appointed director of engineering for that division. **W. C. Messinger**, at present, manager of Chain Belt Co.'s ordnance Div., was elected Asst. secretary of the Company.

. . . at Hewitt-Robins Inc.

Thomas Robins, Jr., president, announced realignment of administrative responsibilities. **Benjamin T. Moffatt**, formerly a vice president has been elected executive vice president. **Harold Von Thaden**, vice president, assumes the added duties of general manager of the international division along with the Robins engineers division which he has headed for several years. **Austin Good-year**, formerly assistant general manager of the Hewitt Rubber and Robins Conveyors division was appointed general manager of both divisions. **Robert A. Nilsen** becomes general manager of the restfoam division. Other officers will continue in present positions.

Cesco Tote Boxes

...Cut Handling Costs
...Make Handling Easier



SPECIAL CESCO FEATURES

- Lightweight
- Self-Stacking
- Quieter Handling

... ruggedly constructed of hardwoods . . . steel reinforced (specially coated steel to prevent rust) . . . riveted for maximum rigidity.

An added Cesco feature . . .

CESCOAT

A new wood preserving process . . . waterproofs . . . greasesproofs . . . is acid resistant

OTHER CESCO PRODUCTS

- Wire Baskets
- Tote Trays
- Special Pallets

WRITE TODAY FOR FURTHER INFORMATION

CESCO CONTAINER CO.

General Offices: 475 Fifth Ave., New York 17, N.Y. • Phone MU 5-4961
Factory: Northampton, Mass.

. . . at United States Rubber Co.

Harry M. Frecker is the new manager of commodity sales for the mechanical goods division, according to an announcement by **W. A. Tipton**, sales manager of the division. In his new position, Frecker will have direct charge of all commodity sales departments for conveyor and elevator belting, V-belts, flat transmission belts, printing rolls and blankets, etc.

. . . at Gar Wood Industries, Inc.

Arthur F. Dries has been appointed manager, sales promotion and advertising. He will be in charge of the corporation's central advertising department which handles all sales promotion and advertising functions for Findlay, Wayne, St. Paul, Richmond and National Lift Divisions, as well as Gar Wood branch offices throughout the country.

on has
the con-
J. W.
director
on. W.
anager
iv., was
e Com-

... at Flexible Steel Lacing Co.

Hugh L. Coats, Jr. is the new north central states sales representative. **Harry Beach**, who formerly covered this territory, now covers the Pennsylvania-New Jersey area.

... at Nichols Paper Products Co.

Arthur E. Jackman has been appointed sales engineer in Detroit and the lower Michigan area.

... at General Electric Co.

Four appointments in General Electric Co.'s newly formed industry control department have been announced by **Carl A. Salmons**, general manager of the department. **Joseph T. Bailey** has been named manager of marketing; **F. Wiley Hubbell**, manager of finance; **William F. Oswalt**, manager of manufacturing; and **Hal W. Poole**, manager of engineering.

... at Standard Pressed Steel Co.

James V. Lester, controller for the last five years was elected treasurer. **Harald F. Gade**, one of the founders in 1903 and recently senior vice president and treasurer, retired. **George A. Gade**, field sales manager was elected to the board of directors.

... at Neff & Fry Co.

D. H. Herbster, president has announced the appointment of **L. R. Neff** to the position of General manager.

... at G. B. Lewis Co.

Fred A. Cramer has been appointed to represent the industrial container division in the greater Illinois territory, excluding Chicago.

... at Hyster Co.

Promotion of **Bob Fletcher** to eastern parts and service manager has been announced by **Jack Lewis**, Hyster parts and service department manager. Fletcher was formerly district representative in the tractor equipment division.

... at Wood Conversion Co.

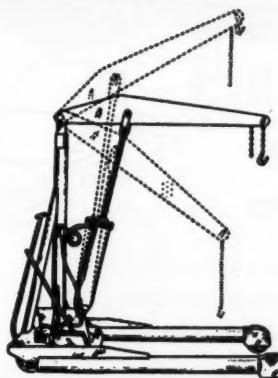
John G. Wood, Jr. has been appointed general line salesman in the

Richmond-Virginia territory. **A. J. Withoff** has been appointed industrial products salesman in the North Carolina territory.

... at Gar Wood Industries, Inc.

R. S. Jay has been appointed sales manager of the Findlay division. **R. M. Steegman** takes over Jay's former position of assistant sales manager in charge of Buckeye equipment,

BIG LIFT..... Little cost..... with the **RUGER** Crane



Through its simple, effective combination of hydraulic power and cantilever boom the Ruger provides advantages both of floor truck and overhead cranes. Besides it does work neither truck nor overhead crane can do—reaches out, over, under picks up, lifts, lowers, travels with load on large roller-bearing wheels wherever you can push a hand truck.

Short, easy, back-and-forth strokes of the pump lever lift load from floor up to 9 ft. high (even higher with extension boom attachment). Load positively supported by hydraulic pressure at any height of lift. Fine-threaded release valve controls the lowering, fast or slow as you desire. Simple . . . safe . . . anyone can operate a Ruger.

Ruger Hydraulic Floor Cranes are built in $\frac{1}{2}$ -ton, 1-ton, 2-ton and 3-ton sizes. The complete story is told in our newest catalog. Please write Ruger Equipment, Inc., West Fourth Street, Uhrichsville, Ohio.

Ruger also manufactures hydraulic cranes for truck mountings in $\frac{1}{2}$, 1 and 2 ton capacities.

Ruger Equipment, Inc.
601 W. Fourth Street
Uhrichsville, Ohio

Please send complete information and illustrated catalog about

Floor Cranes Truck Cranes

(Check one or both)

I am interested particularly in size or sizes checked.

$\frac{1}{2}$ -Ton 1-Ton 2-Ton 3-Ton

Name _____

Company _____

Street _____

City and State _____

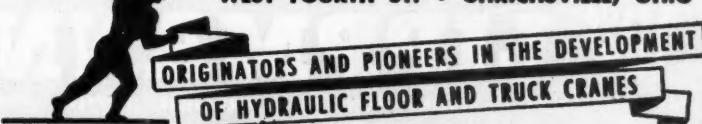
MAIL THIS TODAY

SUGGESTED APPLICATIONS

Handling heavy castings and forgings.
Die removal and installation.
Quenching and plating operations.
Transporting heavy parts to storage or assembly.
Moving finished machines to shipping.
Moving or re-locating plant machinery and equipment.
Loading and unloading trucks, etc.
Lifting, stacking and tiering heavy boxes, crates, drums and barrels.
Engine removal and installation.
Spring repair and replacement.
Removing and installing differentials and transmissions.

RUGER *Equipment Inc.*

WEST FOURTH ST. • UHRICHSVILLE, OHIO



Circle No. 75 on Reader Service Card for more information

David J. Davis is assistant sales manager in charge of Tractor equipment.

... at Koehring Co.

The board of directors at its annual meeting elected **J. R. Steelman** president and **E. A. Brugger** vice president and general manager. In his new post, Steelman succeeds **G. E. Long** who will remain as chairman of the board.

... at Magnesium Co. of America

Three major promotions were announced by **Miles L. Abel**, executive vice-president. **Dennis E. Harvey** was elected vice-president and will head the company's Washington, D.C., offices. **William Johansen**, formerly southwestern division manager, was appointed general sales manager. **Charles J. Futterer** formerly assistant to Johansen takes over as the new southwestern division manager.

... at Tractomotive Corp.

V. M. Dobeus, president and general manager of the Tractomotive Corp. died recently.

... at Gerlinger Carrier Co.

M. B. Gerlinger has been elected president to succeed **Carl F. Gerlinger** who died last November. Other officers of the company are: **V. O. Williams**, executive vice-president and general manager; **A. C. Gerlinger**, vice-president; **Carl A. Gerlinger**, vice-president and secretary; **J. W. Kitzmiller**, vice-president and sales manager and **J. C. Lundy**, treasurer.

WHEN Conveyors will move it faster...cheaper

How many material handling jobs are you still doing the hard way? How many precious man hours, dollars and minutes are you spending to move materials from here to there?

Whether it's bags, boxes, barrels, bales or bulk...whether it's unloading, loading, transporting, lifting or lowering, chances are that a Lippmann Conveyor or combination of them will show substantial savings in time, men and money.

Lippmann is headquarters for all kinds of conveyors, and 28 years of manufacturing and application experience. Lippmann engineers are ready and eager to help you solve your material handling problems. A card or letter will bring prompt and sincere attention to your regular or special requirements. Lippmann Engineering Works, 4629 West Mitchell Street, Milwaukee 14, Wisconsin.



Circle No. 76 on Reader Service Card for more information

... at Bemis Bro. Bag Co.

At the annual meetings of the stockholders and the board of directors, **C. W. Loomis** was elected to the board and **F. V. Deaderick** was named a vice-president. In addition to these new duties, Loomis is vice-president and director of personnel, and Deaderick is eastern director of sales.

... at Lynch Corp.

D. E. Stenson, formerly eastern sales manager for the Par division has been appointed manager of the newly opened eastern district office in New York City. Assisting Stenson will be **R. N. Craven**, a factory trained sales and service engineer.

... at Worthington Pump and Machinery Corp.

Joseph R. Williams, product manager of pavers and portable mixers died recently.

... at Hydraulic Equipment Co.

Hall Kirkham, president announced the appointment of **Harry**

H. Wooden as controller. Wooden was formerly associated with F. C. Russell Co., and succeeds Roy W. Swisher who recently resigned that post.

... at Lee Rubber & Tire Corp.

Alfred W. Crew has joined the Republic Rubber Division, Lee Rubber & Tire Corp. as a field engineer. Crew will headquartered in Charleston, West Virginia from where he will serve coal mine operators and industrial users of Republic's line of belting, hose and packing.

... at Otis Elevator Co.

Clinton H. Vescelius, has been appointed general traffic manager. Previously, he had held the same post with the tube department, RCA Victor Division.

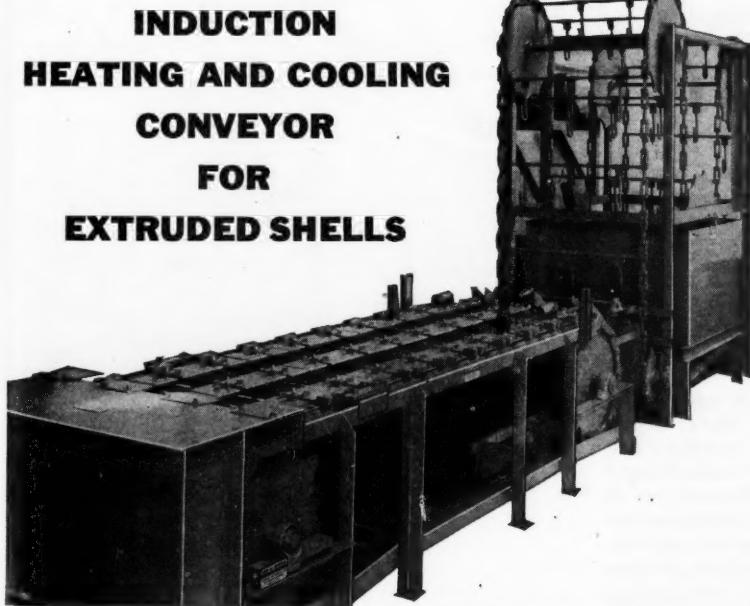
... at Huber Mfg. Co.

F. W. Gillette has been appointed district sales manager for the company in a territory consisting of Virginia, Maryland, Delaware, New Jersey, Eastern Pennsylvania, and the District of Columbia. He will maintain offices at 1706 Surrey Lane, N.W., Washington, D. C. Don McPherson continues as district manager for New York, Massachusetts, Maine, New Hampshire, Connecticut, and Vermont.

... at Bemis Bro. Bag Co.

R. D. McAusland has been named director of western operations and F. V. Deaderick, director of eastern operations. In their new positions the men will be responsible for all Bemis activity, sales and production in their territories.

INDUCTION HEATING AND COOLING CONVEYOR FOR EXTRUDED SHELLS



Heavy Duty and Light Duty Overhead Trolley Conveyors • Slat Conveyors
Chain Conveyors • Belt Conveyors • Gravity Conveyors

CONVEY-all CORPORATION
MANSFIELD, OHIO

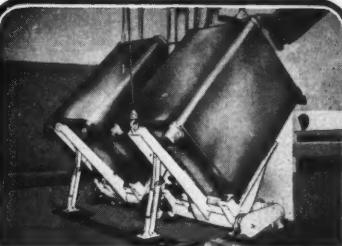
DESIGNERS • ENGINEERS • MANUFACTURERS OF ALL TYPES OF CONVEYING EQUIPMENT
Circle No. 77 on Reader Service Card for more information

FLOW • JUNE, 1952

TOTE
SYSTEM* ...

Biggest Boon to Bulk Material Handlers

since the
"Birth of the
Barrel!"



The modern TOTE SYSTEM has completely outmoded ordinary methods of handling bulk materials.

TOTE SYSTEM—built around 74 cu. ft. aluminum TOTE* BINS together with filling and discharging equipment—is the practical, economical answer to handling, shipping and storing problems.

TOTE assures retention of original product quality . . . eliminates source of contamination and deterioration . . . eliminates losses due to spilling, breaking and sifting.



Gear your bulk handling problems to TOTE SYSTEM. Save time, handling, space and container cost.



Write today for detailed, illustrated literature on the TOTE SYSTEM.

*Both TOTE SYSTEM and TOTE Reg. U. S. Pat. Off.

Write Dept. J

TOTE SYSTEM, INC.
600 South 7th St. Beatrice, Nebr.

Circle No. 78 on Reader Service Card

NOW! FASTER ... STRONGER **Carton Packaging**

With the new

DERBY

Sealer

MODEL 32-T

Gummed TAPE DISPENSER

Especially Designed For
**Tough Filament
Carton Tapes**



TAPE STRAP*
GLASKRAFT
FIBREEN*
SNAKE TAPE*
GLASPUN*
SEAL STRAP*

The Model 32-T takes tough carton tapes in its stride! Equipped with an *extra sharp, heavy duty, tool steel cut-off blade*, this fine machine dispenses such tough, rugged tapes as "Tape-Strap," "Glaskraft" and "Snake Tape" as efficiently as it does the lighter tapes, making less work for the operator and actually stepping-up production time on carton packaging! And here's another important, carton-packaging feature! Fibrous carton tapes are put on without pressure — need only proper moistening to hold. The Model 32-T, by means of an auxiliary reservoir, maintains a high water level in the tank, reducing Capillary Lag and assuring constant moisture at the top of the brush, even when tape is dispensed at great speeds. It's the ideal dispenser for carton packaging, and it sells at such a low, low price!

*These are trade names used by various manufacturers to describe their filament imbedded tapes.

DERBY SEALER FEATURES THAT MAKE THE
MODEL 32-T THE FINEST MACHINE OF ITS KIND!

- Heavy duty, extra sharp cut-off blade
- One-piece solid castings for extra rigidity
- Easy pull handle to reduce operator fatigue
- Delivers from 4 to 34 inches at one stroke
- Auxiliary Water Reservoir
- Accommodates any tape from 1" to 3" wide

DERBY SEALERS, INC.

Designers and Builders of Derby Sealers and
Grip-A-Tab Pressure Sensitive Tape Dispensers

DERBY, CONNECTICUT

Circle No. 79 on Reader Service Card for more information

PACKAGING and SHIPPING SECTION

Six Methods of Packaging

Bulk Material 112

Protective Containers

For Dry Bulk Material 113

14 Ways to Ship

Your Bulk Material 116

Carloading Patterns When

Shipping In Bags & Drums 122

What's New in Packaging and Shipping Equipment?

Portable Gummed Tape Machine—*Mid States Gummed Paper Co.*

This portable gummed tape machine, called Roll-On-Sealer, is said to make possible the sealing or re-sealing of

cartons wherever they may be without moving them to the shipping room. The manufacturer, Mid States Gummed Paper Co. reports that the unit has a non-spilling water tank, which makes it possible to operate

in any position and to tape with the machine upright, on its side, or even upside down. The machine rolls freshly moistened tape directly onto the carton, and a twist of the wrist cuts the tape strip to exactly the right length, after application. Weight of the unit is 2½ lb.

Circle No. 191 on Reader Service Card for more information

Tape Surface Treatment—*Minnesota Mining and Mfg. Co.*

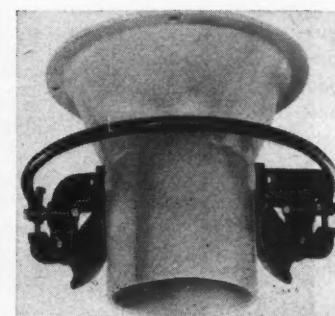
A surface treatment for the backings of most Scotch brand pressure-sensitive adhesive tapes, was announced

recently by Minnesota Mining and Mfg. Co. The treatment is said to provide easy unwind, assurance against breakage, and assurance against adhesive transfer to the back surface of the tape.

Circle No. 192 on Reader Service Card for more information

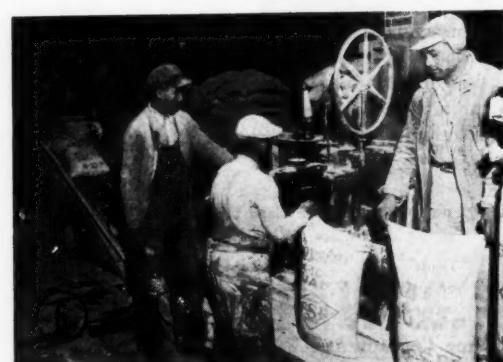
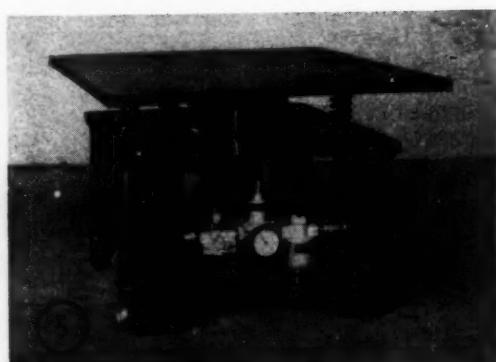
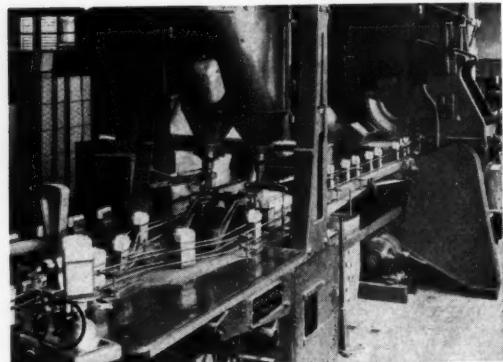
Cam Grip Bag Holder—*Richardson Scale Co.*

This self-locking cam-grip bag holder is recommended for use when filling bags with bulk commodities like foods, chemicals, cements and grains. The grip is designed to suspend 50, 80 and 100 lb. multi-wall paper bags while being filled. The unit consists of a bag holding mechanism mounted on a spout. This is bolted to a hopper or bin outlet for use. Empty bags are slipped over the mouth of the spout and up under the cams which hold them in



Turn to Page 133

Six Methods of Packaging Bulk M



Bulk Material

1. ADJUSTABLE HOPPER can be set for accurate filling of various sized multi-wall bags at International Salt Co., Detroit. Filled bags move to stitching operation then up belt conveyor to storage.

2. ELECTRIC VIBRATOR on the dual supply hopper of this packaging machine insures that every box is completely filled. Continuous sequence includes insertion of liners, filling, and closing operations.

3. THREE-SPOUT AUTOMATIC filling machine at Standard Portland Cement Div., Diamond Alkali Co. Operator pulls handle to release bag onto conveyor which delivers to highway carriers.

4. BAG TYING MACHINE is used by Monsanto Chemical Co. to tie one-lb. bag liners for metal containers. Operators saved by machine now work at more productive jobs. Annual savings: \$3000.

5. AIR-OPERATED VIBRATION TABLE for filling containers with bulk materials. Container sits on table. Vibrating action settles material to most dense form. Available in conveyor height models.

6. SEWING MACHINE closes 700 to 800 bags of fertilizer per day. Bags move on the conveyor and operator needs only to guide edges under the needle. No lifting of the bag is necessary.

Protective Containers

For Dry Bulk Material

Successful shipping of dry bulk materials depends a great deal on one important factor: the selection of the right container. Products which are easily damaged by moisture can be packaged to arrive at their destinations in perfect condition, just as they were shipped . . . or, they can arrive as lumpy, soggy messes. Extremely fine grained material, subject to sifting, can be packaged to stay in its container during transportation and to arrive in full measure . . . or, to leave a trail of sifted-away profits all the way from the shipper to the receiver. With other types of bulk products, too, successful rather than unsuccessful shipment, perhaps the difference between profit and loss, may depend on the selection and proper use of the right container.

On these pages you see six different containers which have proven their worth in action. In them, you will find provision for shipping almost every type of dry bulk material. Some of the containers can be used as-is for most bulk products. Most of them can be adapted for specific contents by treating their interiors or by inserting liners which can be moisture-proof, dust proof, acid proof, or whatever condition is required.

Bags

Paper and textile shipping bags and sacks are used for shipping bulk products of almost every description and texture. They can be had in a variety of shapes and sizes to suit their intended contents. Flexibility permits stacking in large quantities to great height, utilizing completely, space in storage areas or vehicles.

Textile bags are usually made of burlap or cotton in a variety of weights and widths. One of the outstanding features is their ability to take rough handling and their resistance to puncturing, tearing or snagging. Cotton bags may be made of bleached or printed cotton cloth, or of unbleached coarser woven material. The former is ideal where appearance is of primary importance (for shipping products like flour, sugar, etc. to retail outlets). The latter type has the advantage of being lower priced than the bleached or printed bag. It retains all the strength features however.

Filling machines are available to simplify and speed up the use of all types of bags. Some of them are completely automatic units which not only fill, but also paste, sew, or sew and tape bag tops closed. They are particularly useful for products like foodstuffs, where human handling is undesirable.

Paper shipping bags used for bulk materials are generally of the multi-wall type, and are made from two to six plies, or walls of specification paper, often in combination with special coatings or laminants. It has been found that ordinarily, bags constructed of several walls of relatively light weight

Six containers for bulk products . . .



1. MULTIWALL PAPER SACKS are strong, easily handled, may be palletized as shown here for fork truck handling. They can be waterproofed.



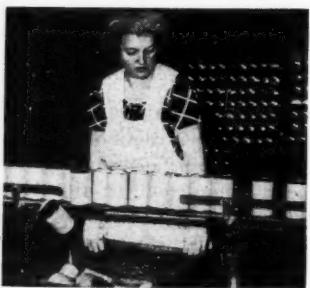
2. FIBRE DRUMS combine strength with light tare weight, have excellent sift-proof qualities. Drums can be supplied with any of a wide variety of closures.



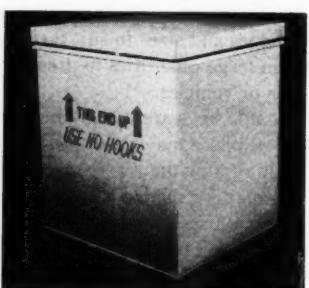
3. WOODEN BARRELS are available in capacities from one to 60 gal. Two types are slack barrels, and tight barrels. Can be used again and again.



4. TEXTILE BAGS may be made of burlap or cotton, can take rough handling and are resistant to puncturing, tearing, or snagging. Easily stacked.



5. COMPOSITE PAPER-BOARD CANS fit well into high-speed operations. Can be filled, closed and labeled in one cycle on some machines.



6. MULTI-SIDED CONTAINER may be square, rectangular, or any shape. This one uses steel strapping and interlocking flaps for strong, tight closure.

paper have greater flexibility and strength than those made of only a few walls of heavier paper.

Five standard types of paper bags are available to you for shipping your bulk products. They differ primarily in the method used for closure. Two of the five types, sewn valve and pasted valve bags use valves for filling and closing. Completely fabricated in the bag factory, this type bag has a small opening in an upper corner. An inner flap operates as a self-closing check valve as soon as the sack has been filled. Sleeves are available to prevent sifting.

For products not readily handled through relatively small valve openings, and where low cost is important two types of open mouth sacks have been developed. They differ from each other primarily in the method used at the factory to close bottoms, one having an open mouth, with sewn bottom; the other an open mouth, with pasted bottom. In use, mouths may be closed by sewing, wire tying, stapling, pasting, or by use of gummed tape after the sacks have been filled.

A sewn-open corner type sack, an intermediate between valve types and open mouth types rounds out the line of standard types of paper sacks. It has a sewn bottom and a partly sewn top.

Drums

As in the selection of bags, there are many types of drums to choose from in selecting the right one for your bulk products. They are made of several materials, generally, metal or fibre. A multi-sided container, is made of corrugated board, and may be square, rectangular, or any shape desired. It can be closed with steel strapping to make it almost impossible to open prematurely.

Two standard types of steel drums vary principally in their strength, and in their methods of filling and closing. Light drums are made of steel 18 gauge or lighter and of 100 lb. capacity. They usually have an open head type of construction, making filling a simple and quick operation. Heavy drums are tight head drums and are made of 20 gauge or heavier steel. They are usually equipped with two screw thread openings for filling and emptying.

If you are looking for good sift-proof qualities combined with strength and light tare weight, you will want to

Turn to page 128

and
only a

er bags
g your
marily
Two of
pasted
g and
in the
small
an in-
closing
k has
ole to

handled
open-
port-
sacks
from
method
toms,
sewn
with
ay be
lling,
ape

.,
an
and
line
s. It
ewn

here
ose
for
e of
l or
ade
be
de-
rap-
e to

ums
and
los-
steel
1 lb.
open
ing
on.
ms
ier
ith

ft-
th-
to

JAN-P-116, Packaging and Packing for Overseas
Shipment. Preservation, Methods of, May 8, 1945,
and Amendment #2, Dec. 14, 1948, Method IIb
"Container-Barrier-Container"

READ AND SAVE
THIS ISSUE FOR
FUTURE REFERENCE

MILITARY PACKAGING SIMPLIFIED #3 of a series

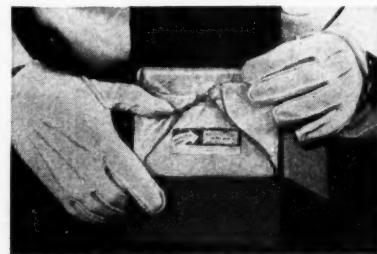
The standard method of packaging and packing of electrical equipment and spare parts (electronic, electrical and electro-mechanical) shall be as described in JAN-P-658 and as amplified by joint Army-Navy specification JAN-P-116.



1. Small electric motor (not over 40#), properly cushioned, placed in a close-fitting carton with proper amount of desiccant. Note that desiccant should not be placed next to an untreated surface, as corrosion will occur. Carton should not be tightly taped; merely enough for physical strength.

2. Carton is immediately inserted in moderately snug-fitting bag constructed from MIL-B-131A, Class B material: Reynolds RM-112 if object weighs 30# to 40#; RM-102 if object weighs 5# to 30#; and RM-245 if less than 5#. Bag should be large enough to permit three additional heat seals at open end for inspection.

3. Bag is then heat-sealed immediately, first exhausting as much air as possible without stretching the material too tightly over corners of package. Care must be exercised in heat-sealing to be sure temperature, pressure and dwell time meet the recommendations of the barrier material manufacturer.



4. After barrier bag has been properly exhausted and sealed it should be identified as to contents. The protruding "ears" of the bag are then folded down and the entire unit is ready for insertion in the outer container which can be of fibre or wood. The bag should also carry a label reading "Method II Pack. Do not open."

5. The completed package ready for shipment. Note that the identification label and the Method II warning label are also required on the outer container. In many instances the outer container will be of wood construction; if so, it must be lined with kraft paper, or fibre board, to protect the barrier from puncture.

Method IIe—"Container Overwrap." This method uses the same materials (MIL-B-131A, Class B) as Method IIb pictured here, except the outer individual container is omitted and several units of barrier bags are overpacked in one wooden container.

SEE REYNOLDS TRAVELING DEMONSTRATION
OF MILITARY PACKAGING!



Government-specified methods of foil and laminated-foil packaging demonstrated with actual military products and parts. Write for *Coach Itinerary!* For expert help on any packaging problem, call the nearest Reynolds Sales Office and ask for the "Packaging Man." Or write direct to Reynolds Metals Company, General Sales Office, Louisville 1, Kentucky.

REYNOLDS ALUMINUM LAMINATED BARRIERS ARE SUPERIOR FOR METHOD II PACKAGING

- 1. Excellent moisture-vapor protection
- 2. Extremely rugged under all climatic conditions
- 3. Offers super-strength heat seal closure



REYNOLDS ALUMINUM

Tune in every Week . . . "The Kate Smith Evening Hour" on Television—NBC NETWORK

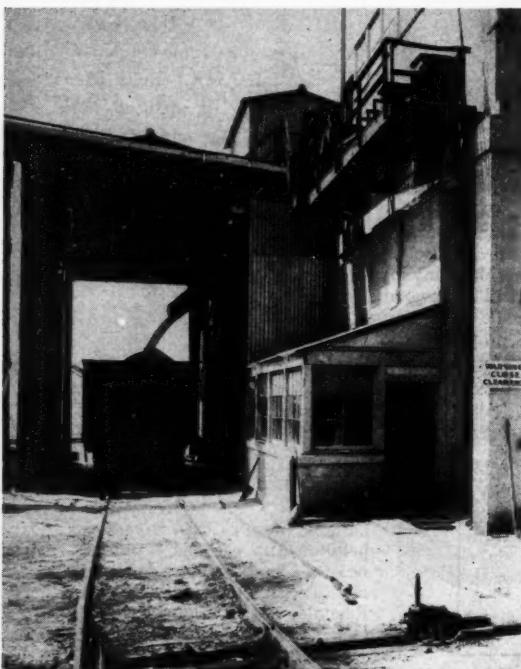
Circle No. 80 on Reader Service Card for more information



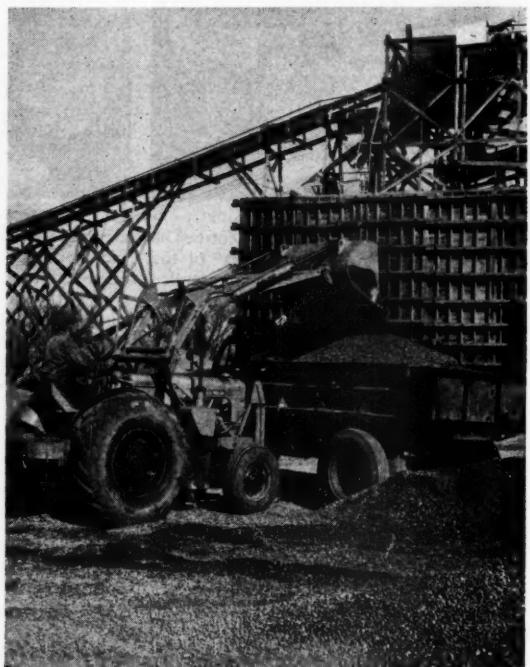
THIS DIGGING AND LOADING SHOVEL, equipped with a one-cu.-yd. dipper with teeth, is shown dumping crushed stone into a highway truck. The unit works interchangeably with a 1 1/2 cu. yd. stock-pile and two-cu.-yd. coal bucket.



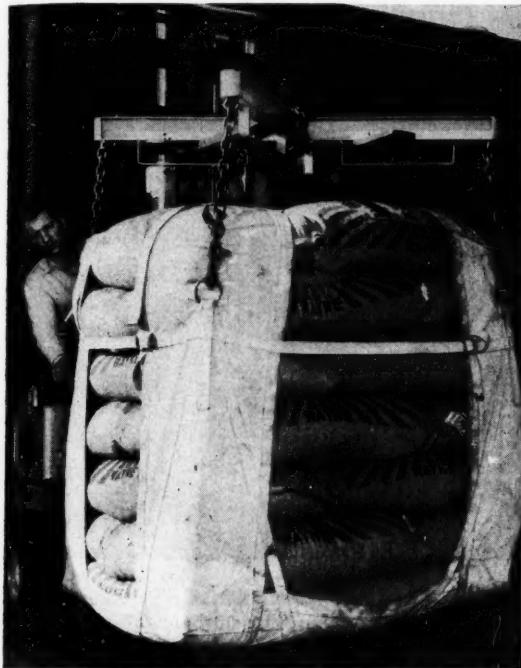
TRUCK CRANE is designed for maximum travel, also for loading outgoing carriers in addition to regular duties of stockpiling, feeding to production, etc. Highway truck is spotted near crane so that swinging boom is only movement necessary while loading.



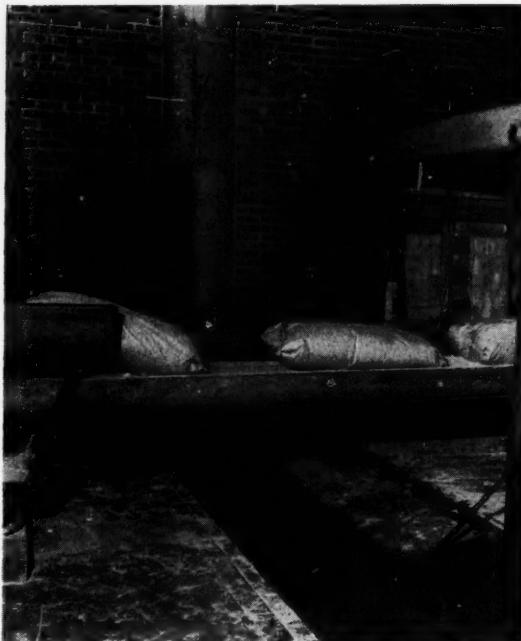
IF MATERIAL NEED NOT BE PROTECTED FROM MOISTURE, you can often ship in bulk lots in gondola cars. The International Salt Co., Detroit, has a chute leading from the end of its crushing and sizing conveyors through which salt is shunted directly to cars.



FRONT-END SCOOP ATTACHMENT, with a 1/2-cu.-yd. bucket, is mounted on a tractor, is used in this gravel plant for loading aggregate into a truck for disposition. Lifting capacity of the attachment is 2500 lb. Heavy-duty rear tires on tractor gives needed traction.

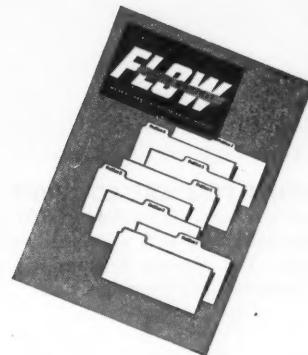


WHEN YOU'RE SHIPPING BULK MATERIAL IN BAGS, this load binder, made of canvas, is designed for handling in load units. Note that a standard fork truck is used, although a special rig is necessary to hold the binder. Canvas also protects load from elements.



IF YOU SHIP IN BAGS and handle them individually, a conveyor can often be set up to transfer loads directly from the end of the bag filling line into the outgoing conveyor. Note that these bags ride down the chute onto the portable belt conveyor.

14 Ways To Ship Bulk Material



If you ship your bulk materials in rail cars and trucks in bulk lots and in containers, the photos on these and the following two pages are designed to help you evaluate your present methods in the light of handling practices of other plants. Elsewhere on these pages is a section designed to help you during the packaging of your product in cans, bags, drums, etc.

You will note from the photos in this section that much of the same equipment already illustrated and described previously can be used for loading operations as well.

Power cranes and shovels are ideal for loading open top carriers, especially when material is transferred from stockpiles. Bridge cranes are also often used for this same function.

Industrial trucks, tractors, front-end scoop trucks and specially designed vehicles are also widely used for such loading. Normally, fork trucks are equipped with special attachments to handle the bulk loads.

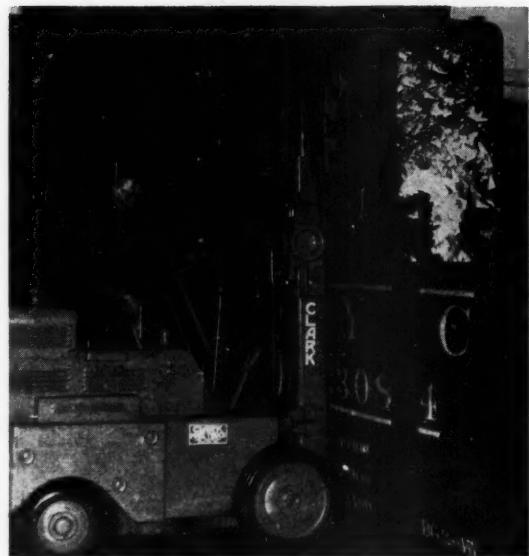
Conveyors are advantageous in that they can transport loads directly from inside the plant into the carrier. As shown, certain types of conveyors remove material from stockpiles and load vehicles.

For loading large carriers, for example, the holds of ships, boom conveyors extend into the interior of the vessel and throw the material uniformly over the storage area. In one Hawaiian installation, this type of conveyor loader discharges approximately 350 tons per hour.

Turn The Page

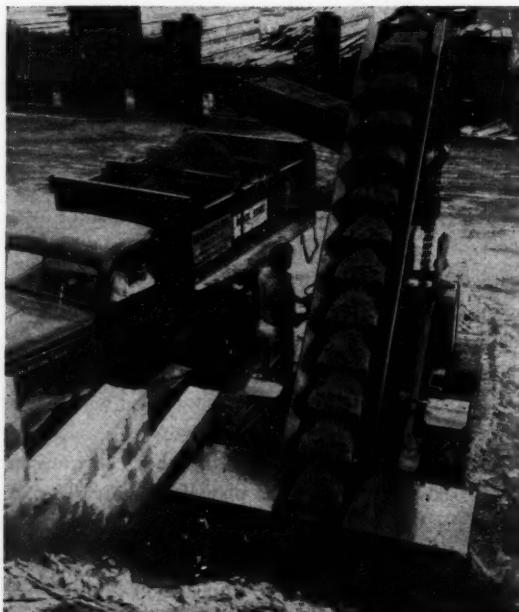


WHEN YOU ARE LOADING SHIPS, this trimmer with a 36-in. belt discharges 350 tons per hour. The unit distributes the bulk material evenly to all parts of the hold. The trimmer is supported on a long boom and is lowered into the ship's hold.

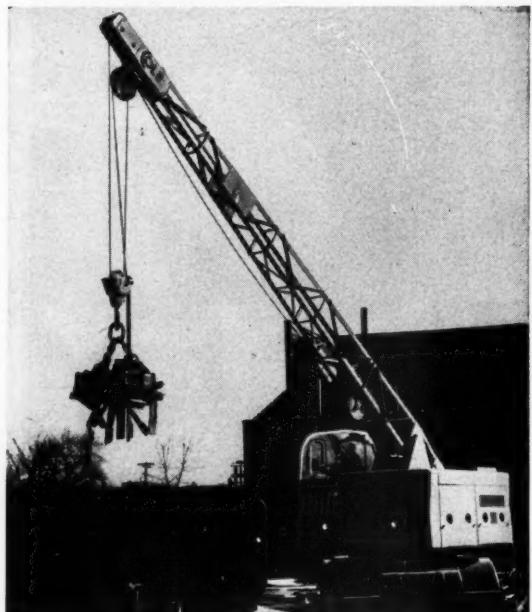


REVOLVING HEAD FORK TRUCK may be used for discharging loaded containers into open-top outbound carriers. While this skid bin is loaded with scrap, other containers filled with all types of bulk material may be discharged with this type of equipment.

14 Ways to Ship Bulk Materials . . . cont'd.



CONTINUOUS LOADING OF CARRIERS is accomplished by this bucket loader. It is backed into a pile of bulk material, then it digs out the load and raises it in buckets, discharging it down a chute into a car or truck. Chute may load from either side.



TRUCK CRANE, EQUIPPED WITH A MAGNET, is shown handling bulk metal. This unit, used at the yard of the Conlon-Moore Corp., Joliet, Ill., is designed to eliminate hand unloading methods which often breed accidents to operators.

When you ship nails—ship safely in

INTERNATIONAL'S
keg-it

**The square container
tried, proved, and adopted by many of
the largest nail manufacturers**

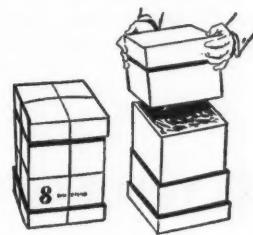


This new modern fibreboard package for nails didn't come about by accident. Over three years of research and thousands of test shipments proved it to be the safe, sturdy container with many economical advantages. We would like to tell you more about it, how easily it will fit into your operation. Write us for the complete story.



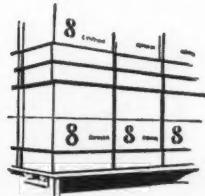
STACK IT

...Saves up to 30% of warehouse space. Readily palletized for unit load handling.



SEAL IT

...Replaceable top protects nails from dirt and weather.



STAMP IT

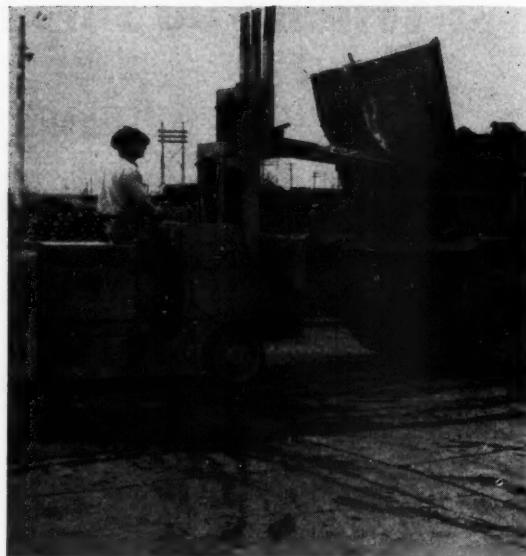
...Quick, easy side marking aids identification, speeds inventories.


International Paper company
CONTAINER DIVISION

220 East 42nd Street, New York 17, N. Y.

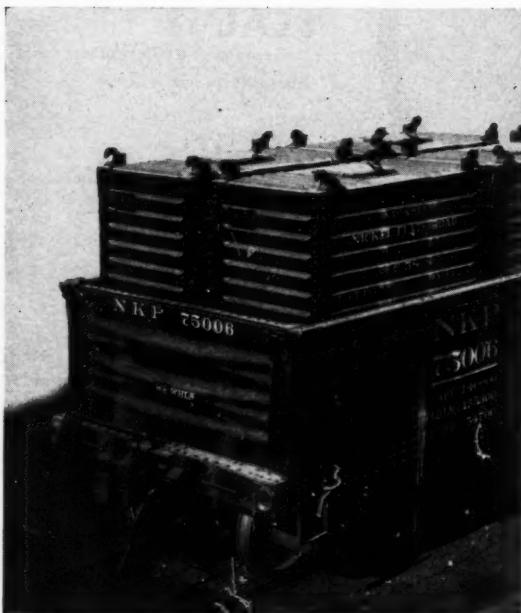


TWO-WHEEL HAND TRUCKS are often employed for moving bagged bulk material from the end of a bag filling line to rail cars and trucks. They are especially useful when loading closed-top carriers. Often, two trucks are used in teams for rapid loading.



FRONT-END DUMPING HOPPER is mounted on fork truck for discharging bulk material. Usually, dumping action is controlled by truck operator without leaving his seat. These containers make excellent storage units in the plant, eliminate intermediate rehandlings.

14 Ways to Ship Bulk Materials . . . cont'd.



BULK SHIPPING CONTAINERS are handled by overhead equipment, note lugs at top of units. Eight to 10 of these containers may be shipped in one gondola. At the receiving end, they may be unloaded instantly or partially according to amount desired.



FOR EASE IN LOADING TRUCKS, many firms construct a hopper feeding station like the one shown. Often, a scale is built into the dispatching station. Crane has a 50-ft. boom, is pictured at the Globe Construction Co., Wichita, Kansas.

on
imp-
ing
units

WHETHER YOUR PRODUCT GOES
around the Block
or around the World **YOU CAN DEPEND**
ON GENERAL ENGINEERED
SHIPPING CONTAINERS

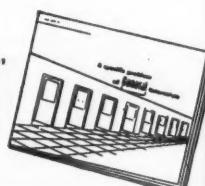
Are your packing and shipping costs too high? Do you have a special packaging problem? If so, our Packaging Laboratories can probably help you. They are among the most modern and efficient in the country and are staffed with experts who have designed new and better shipping containers for hundreds of manufacturers. So, whether your product is large or small—for domestic or export shipment—write us. We will design a container that is Engineered for *Your Product*, that is "Part of *Your Product*."

General Box is certified to perform tests under the safe transit program of the Porcelain Enamel Institute.



SEND FOR YOUR COPY OF "THE GENERAL BOX"

It is packed with facts of interest on more efficient and more economical shipping containers. Write for it, write for it TODAY.



ALL TYPES OF ENGINEERED SHIPPING CONTAINERS

District Offices and Plants:

Cincinnati, Denville, N. J., Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, Sheboygan, Winchendon, General Box Company of Mississippi, Meridian, Miss., Continental Box Company, Inc., Houston, Dallas

General

★ ★ ★ ★

BOX COMPANY

1857 Miner Street,

Des Plaines, Illinois



General
Wirebound
Crate



General
Nailed
Box

General
Corrugated
Box



General
Cleated
Corrugated
Container



General
All-Bound
Box



General
Pallet and
Pallet
Box



General
Watkins-
Type
Box

Circle No. 82 on Reader Service Card for more information

To Make Sure Your Bulk Shipments are Protected . . .

Use These Carloading Patterns When Shipping in Bags and Drums

Here are some rules which are designed to aid you if you ship your bulk material in paper bags. In addition to the car loading pattern that is shown for bagged material, note the diagram which shows a prescribed method for placing loaded drums in rail cars too.

When You Ship In Highway Trucks

Pebbles, sand and all other grit should be swept cleanly away before loading. Bags should be stacked solidly and flat. When loading on open trucks with stake sides or in closed trucks, it is preferable to load sacks flat with

When You Ship In Drums:

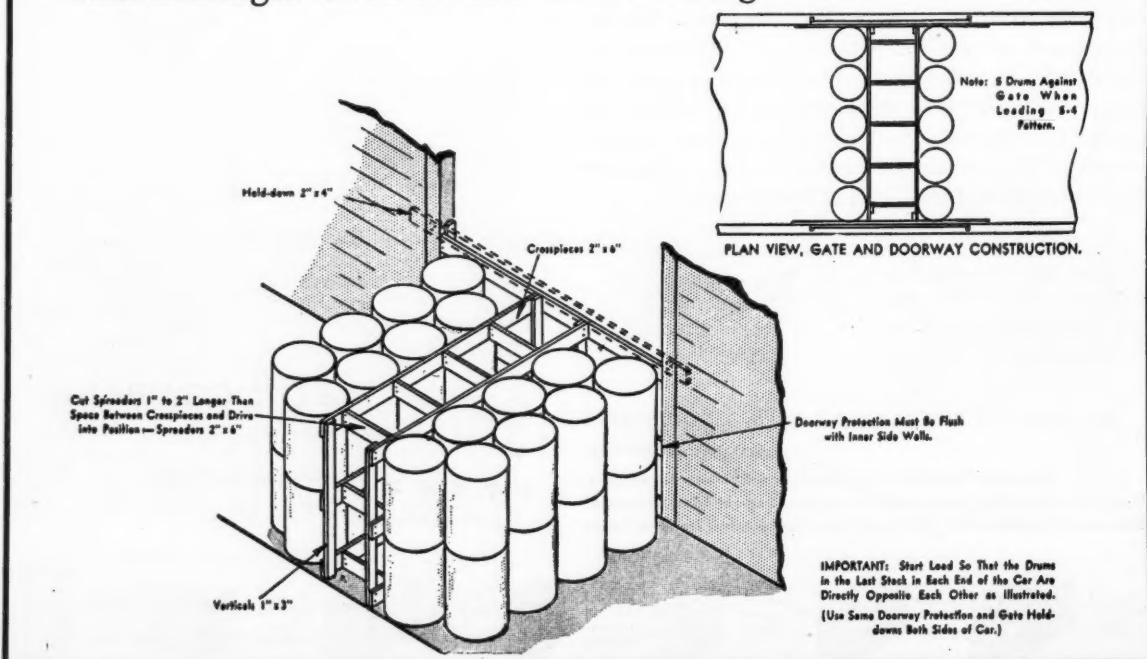
top or bottom sack closures parallel with sides of the vehicle. In this method of loading, the ends of the sacks may provide protection from possible abrasive action of the truck sides. Heavy paper or paperboard is sometimes used to protect a load from possible damage from bottom and sides of trucks.

Bags should be protected against damage from protruding screw heads or other sharp objects and from racks or stake sides. Skid straps should be firmly fastened.

When You Ship Bagged Material In Rail Cars

When ordering cars from the railroads, be sure to

This is a rigid wood-braced load of straight-sided fibre drums





Do you get steel strapping service like this?

HERE Bob Thomas, one of the Brainard Strapping System salesmen in New York, shows a customer how to strap a coil of perforated strip steel for shipment—quickly and securely.

Like other Brainard salesmen, Bob knows that *the proper use of steel strapping* is just as important as the strapping itself. That's why he spends a lot of time out in customers' plants—"showing how". And that's why he's fast on his feet when a customer needs a replacement tool, or strapping mate-

rials right now.

Is Bob ever stumped by a tough packaging problem? If so, you can count on him to get Brainard engineers into your plant in a hurry—to study your methods . . . work out the specifications for you.

Take a tip from Bob Thomas—your Brainard salesman can give you *complete steel strapping service*. Give him a call and let him demonstrate. Offices located throughout the U. S.; in Canada, P. J. McArthur Company, Toronto.



COMPLETE STEEL STRAPPING SERVICE, LIGHT AND HEAVY DUTY STRAPPING, TOOLS AND ACCESSORIES

Brainard

SHARONSTEEL

STEEL DIVISION

SHARON STEEL CORPORATION

WARREN, OHIO

For catalog on Brainard Strapping System write
Brainard Steel Division, Dept. R-6, Griswold Street,
Warren, Ohio.

specify that the cars are for loading commodities packed in paper shipping containers so you get good equipment.

Cars must be clean, dry, and free from protruding nails or other projections, have sound roofs, smooth floors, sides and end walls, and tight fitting doors. All dust and dirt must be removed from car walls, ends, floor and ceiling. The floor must be swept clean of all pebbles. Grains or grit under the side boards of the car should also be removed. These sharp particles have a tendency to work out underneath the load.

Boards, nails, bolts, etc., necessary in car construction, when loose, must be made tight. A straight-edge board, approximately four to six ft. in length, and of one-inch material will be found to be of advantage in locating protruding and loose nails. Board should be drawn along car walls in a perpendicular position.

Make it a point to inspect regularly all loading equipment used in handling sacks, such as conveyors, chutes and hand trucks. Make sure that there are no nails, bolts, splinters or other sharp points that may cut or tear the bags.

Cover the car floor with a proven grade of liner, and put at least three thicknesses of paper on the door edges, or use cardboard sheets now available for this purpose. Generally speaking, it is not necessary to line the sides of the cars except when in poor condition.

Asphalt laminated paper may be used to seal cracks in car doors to prevent dirt, cinders, rain and snow from getting in on the load.

Do not load cars showing oil, acid or similar stains, and when loading sacks filled with food products avoid cars with contaminating odors.

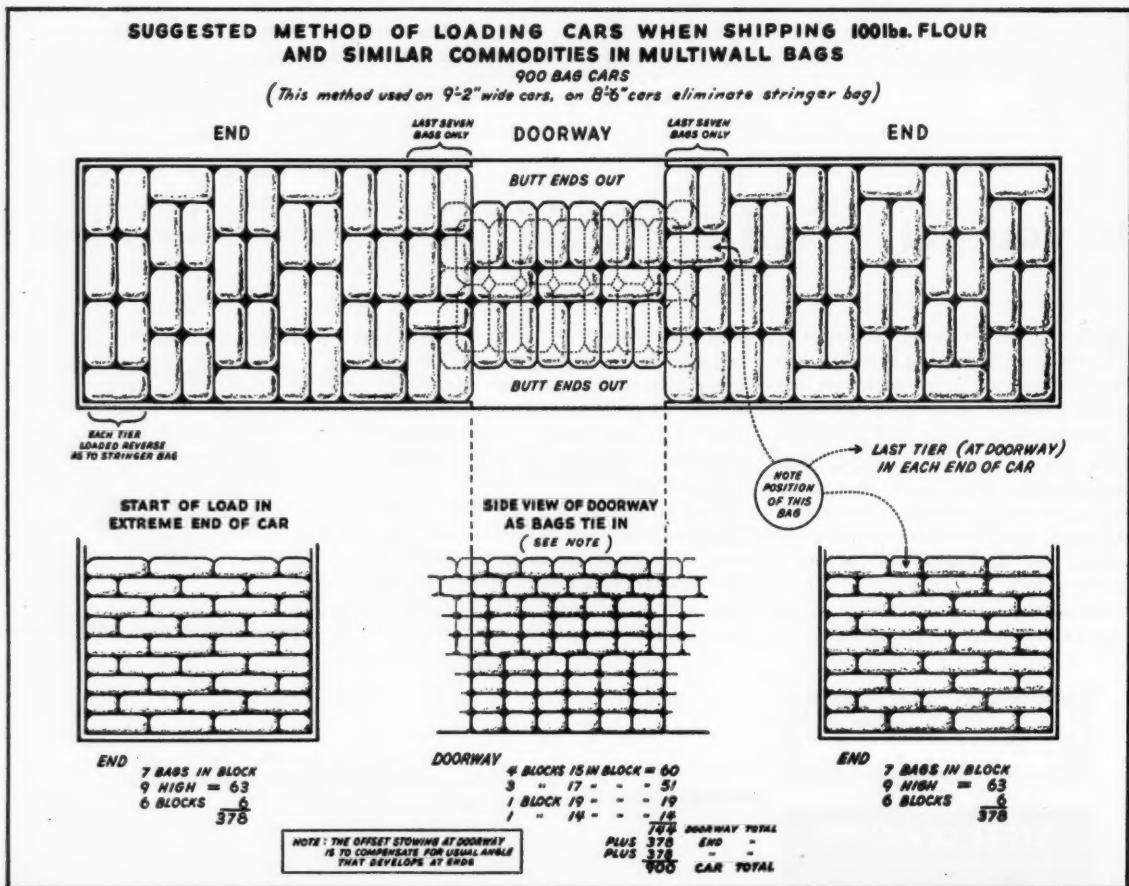
When An Entire Rail Car Consists Of Bagged Material

Lading must be so secured that it will not come in contact with side doors, and the load must be made as tight as possible to minimize shifting in transit. Loads should also be so placed that there will be more weight in one end or side of the car than in the other end or side.

One of the following three different methods of loading, (1) Crosswise, (2) Brick Wall, (3) Lengthwise, may be used when loading cars when all loads are in bags. However, the choice of the best method of carloading depends to a large degree upon the size and shape of the container.

The "Crosswise Method" is as the name implies the loading of bags crosswise in the car. Some firms have found that by altering the length of their bags to fit four

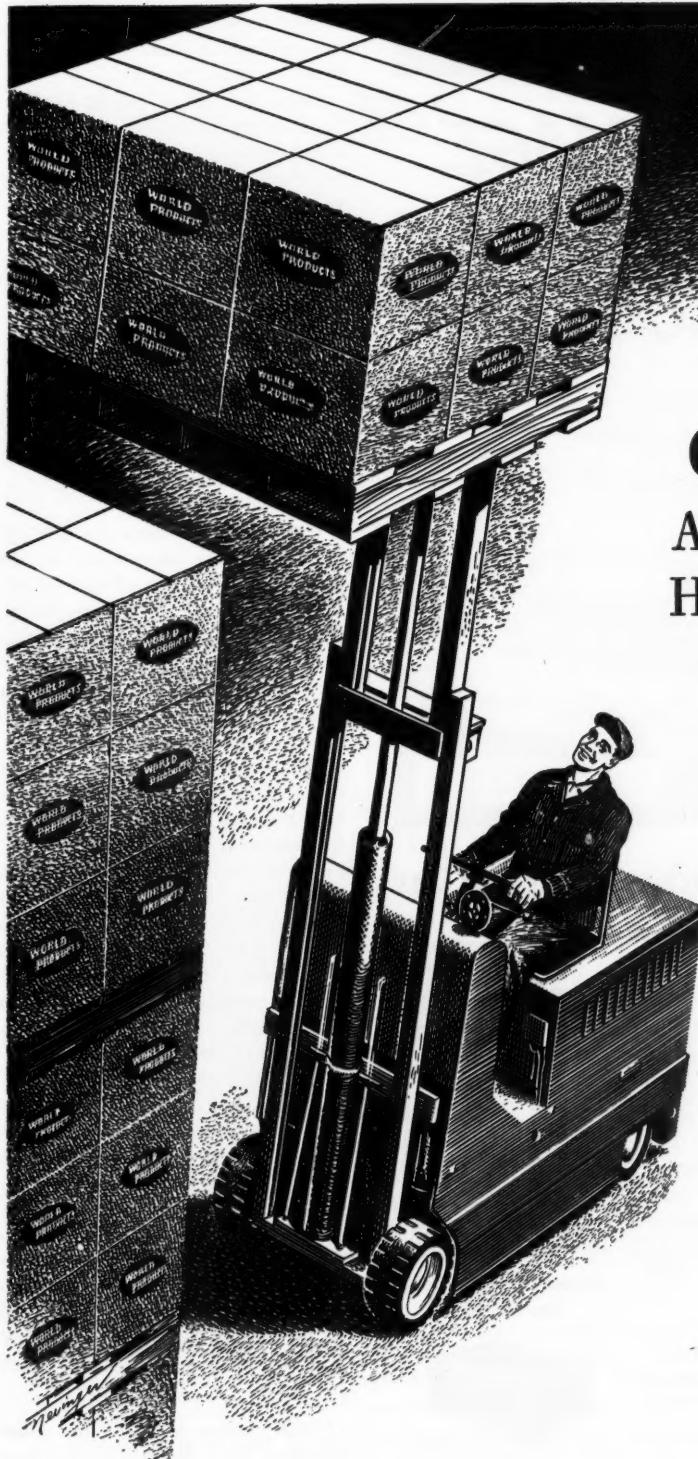
When You Ship In Bags:



acks in
w from
ns, and
id cars

in con-
as tight
should
in one

oading,
may be
. How-
depends
tainer.
ies the
s have
it four



GAYLORD BOXES

Assure Easier Warehouse Handling of Your Product

Built with exceedingly high compression strength, Gaylord Boxes eliminate "weaving" or "toppling" in storage and in transit.

That's just one more example of the economy of Gaylord controlled quality. Your nearest Gaylord representative is ready to help you with your packaging problems. Get in touch with him.

*It's the unseen quality
that gives you the extra
margin of safety in*



GAYLORD CONTAINER CORPORATION
General Offices: SAINT LOUIS

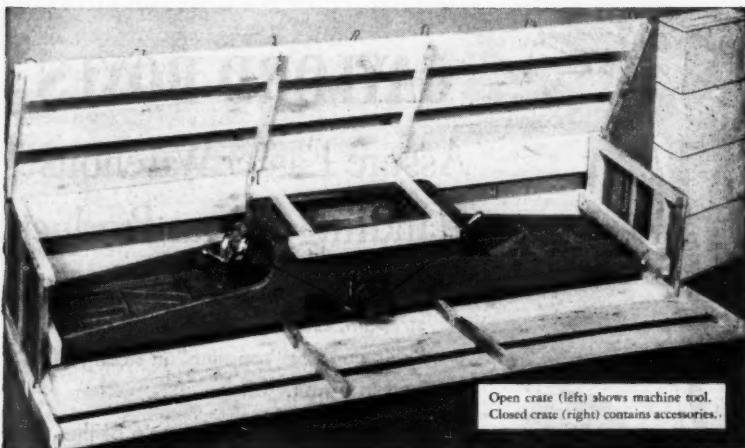
CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT BAGS AND SACKS • KRAFT PAPER AND SPECIALTIES

New York • Chicago • San Francisco • Atlanta • New Orleans • Jersey City • Seattle • Indianapolis • Houston • Los Angeles • Oakland • Minneapolis • Detroit • Columbus
Fort Worth • Tampa • Dallas • Cincinnati • Des Moines • Oklahoma City • Portland • Greenville • St. Louis • San Antonio • Memphis • Kansas City • Bogalusa • Chattanooga
Milwaukee • Weslaco • New Haven • Amarillo • Appleton • Hickory • Greensboro • Sumter • Jackson • Miami • Omaha • Mobile • Philadelphia • Little Rock • Charlotte • Cleveland

Circle No. 84 on Reader Service Card for more information

51 YEARS OF BETTER BOXES—“The American WAY”

SAVE DAMAGE, WEIGHT and COSTS \$\$\$



Open crate (left) shows machine tool.
Closed crate (right) contains accessories.

American "Wirebounds" Ship Machinery Safer for Less 2 Crates are Lighter, Cheaper than One

Problem: Excessive Shipping Damage! This machine tool with accessories, formerly packed in one wirebound crate. Heavy, expensive, vulnerable if dropped.

Answer: Two, new American Wirebound Crates! One for the tool, the other for accessories. Individually designed, "Pressure-Packed," they eliminated cause of damage, saved 21 lbs. weight, cut crate costs \$2 per unit and lowered shipping expense as well! Are your containers American-made? If not, get in touch with us today! You, too, will save damage, weight and costs!

Timber Tracts and Two Great Plants (Est. 1901)

Thousands of acres of company-owned timber supplying veneers to our plants conveniently located in Cleveland, Ohio, and Marion, South Carolina.



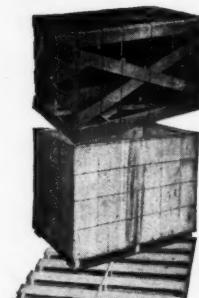
THE American BOX CO.

1909 W. 3rd Street
Cleveland 13, Ohio

Phone: SU 1-5200

Marion,
South Carolina

Circle No. 85 on Reader Service Card for more information



American Wirebound Crate,
Tote Box, Pallet



American Fibreboard Box



American Nailed Wood Box

abreast (the length of the bag runs crosswide in the car) in the carrier thus assuring a tight fit.

With the "Brick Wall Method", bags are interlocked crosswise in the car such as the arrangement of bricks in a brick wall. This offers a sturdy pile for maximum resistance against shifting.

When using the "Lengthwise" method, bags are placed so their length runs parallel with the sides of the car. However, with this method, greater bag surface is exposed to the abrasive action of the car walls.

When You Load In Car Doorways

Loading in car doorways should be done in such a manner so that this part of the load acts effectively as a keystone between the load in the two ends of the car. The loading method used in doorways of the car should lock the entire load together and thus minimize longitudinal shifting in transit. Use a good grade of dunnage in the doorway or steel strapping covered with corrugated board. This protects the load if there is any shifting in transit.

When loading in bags of sufficient length, the "Key Sack" method of doorway loading is often effective in keeping bags from tumbling down and jamming against car doors. This method consists of placing a bag under retaining piles in much the same manner as a stop is placed under a door in the home or office. This "key" bag is jammed under one end of a pile so that the bags above it are held against the rest of the load at a slight angle. This acts to hold the entire load in check.

For additional information on various carloading patterns and methods, write for Pamphlet No. 3, published by the Operating-Transportation Division, Association of American Railroads, 59 East VanBuren St., Chicago, Ill.

(*FLOW* wishes to thank the Paper Shipping Sack Manufacturers' Association for their help in connection with the above report—Ed.)

**Do You Know About
The FLOW DIRECTORY?
See Page 154**



World's strongest tape?

... Douglas Aircraft wins first prize in a packaging contest using this powerful filament tape



FIRST-PRIZE WINNER! Only short strips of "Scotch" Brand Filament Tape are needed to fasten the lids of these packages... prize-winners in the recent contest of the Society of Industrial Packaging and Materials Handling Engineers. They won first place for Douglas Aircraft!

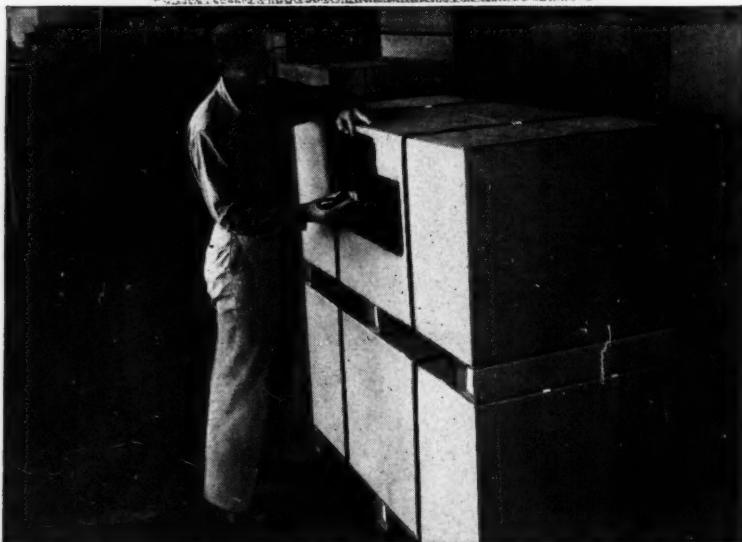
Unlike conventional banding or palletizing materials, "Scotch" Brand Filament Tape sticks tight to the job right off the roll—resists terrific strains and impact shocks without breaking. No sharp edges. No special applying equipment required. Your supplier has many widths and colors.



The term "SCOTCH" and the plaid design are registered trademarks for the more than 200 pressure-sensitive adhesive tapes made in U.S.A. by Minnesota Mining & Mfg. Co., St. Paul 6, Minn.—also makers of "SCOTCH" Sound Recording Tape, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-slip Surfacing, "3M" Abrasives, "3M" Adhesives. General Export: 270 Park Avenue, New York 17, N.Y. In Canada: London, Ont., Can.

Circle No. 86 on Reader Service Card for more information

SIGNODE STRAPPED PALLET WINS STOLLER AWARD!



Shown are two examples of W. E. Christopherson's better packaging method which won the Irving J. Stoller Special Award at the 1951 SIMPMHE Convention.

Weight, shipping charges reduced 19%... materials, labor costs, 72%

Strapped pallets answered a packaging puzzle that confronted W. E. Christopherson, Supervisor of Packaging and Crating, Douglas Aircraft Company, Santa Monica, California.

Fire prevention kits for aircraft, valued at \$4,748.00 each, formerly were packaged in four-carton units. These were repacked in a heavy wooden box and Signode steel strapping applied. Weight and packaging costs were too high.

Mr. Christopherson had a new idea. Components of each kit were put directly into the cartons—all 4,430 pieces—already inspected and packaged. Now, each kit of 4 cartons was stacked on a sturdy, disposable pallet, bound together in a single unit with Signode steel strapping.

Saves weight, time, money

Weight dropped 73 pounds! Labor and material costs per unit dropped \$11.83! Total savings per box shipped by freight were \$21.16 per unit! 605 kits were shipped by the new method of packaging. At savings per kit of \$21.16, total savings amounted to \$12,801.80!

Palletize for Profit Yourself!

If you want to know how improved methods of palletizing can cut your packaging, handling and shipping costs, ask to have an experienced Signode field man call on you. Signode perfected many of the most widely used palletizing methods.

SIGNODE STEEL STRAPPING COMPANY

2618 N. Western Ave.

Chicago 47, Illinois

this seal means security in shipping



Offices Coast to Coast
In Canada: Canadian Steel Strapping Co., Ltd.
Foreign Subsidiaries and Distributors World Wide

Circle No. 150 on Reader Service Card for more information

PACKAGING . . .

(Continued from page 114)

investigate the possibility of using fibre drums for shipping bulk materials. They are available in diameters from eight in. up to 23 in., and in any capacities up to 75 gal., or 10 cu. ft. Almost any size or shape fibre drum is available to suit any products or shipping condition. Generally, they are made with fibre sidewalls, but tops and bottoms may be metal, solid wood, plywood, or fibre. The covers may be fastened with expanding metal locking bands or by clips, lugs, wire staples, pressure sensitive tape, or gummed kraft type. Drums can be lined or treated to make them waterproof, greaseproof, vapor proof, acid proof, or for any such protection required. Their adaptability has suited them for use with almost any type bulk product including chemicals, foods, petroleum products, abrasives, metals and metal products, dry colors, pigments and dyes.

Barrels

From one to 60 gal. capacities are available in barrels and kegs. For handling dry products, there are two general types of barrels. Slack barrels for the shipment and storage of powders, semi-solids, and solids; tight barrels for the shipment of liquids, semi-solids and heavy solids.

Slack barrels may be tongued-and-grooved to make them sift-proof, but for larger grained materials, slats usually have flush edges. Wood hoops may be used to hold slack barrels together, or for added strength, beaded steel hoops, or wire hoops, are available. It is important that in selecting a wooden barrel, the effect of various types of wood on the contents be considered. A food product, for instance, cannot be shipped in barrels made of wood which imparts a foreign taste. In general, a well-made properly dried slack barrel can be expected to carry up to 400 lbs. of dry products in the domestic trade if handling and shipping conditions are satisfactory. For heavier weights, cleats and head-liners may be used.

A tight barrel is what the name im-

using
ick materials
in any
cu. ft.
e drum
ucts or
y, they
ls, but
l, solid
covers
g metal
s, wire
pe, or
can be
water-
f, acid
ion re-
suited
y type
chemicals,
asives,
colors,

es are
For
re two
barrels
ge of
; tight
quids,

l-and-
f, but
slats
hops
ls to
available
recting
various
the con-
tance,
de of
taste.
dried
carry
in the
ship-
For
inners

the im-
LOW



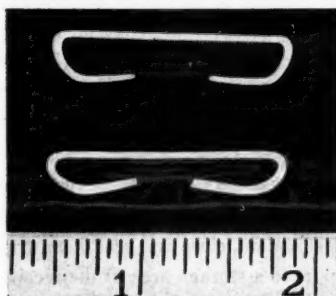
**UARCO
saves
\$20,000
per year**

with International Stapling Machine

Uarco, Inc., Chicago manufacturers of business forms reports a saving of more than \$1650 a month with an International Retractable Anvil stapling machine.

The stapler, a double headed, air operated model priced at only \$3,400 (it almost paid for itself in 60 days), is used to close filled cartons from the outside, top and bottom simultaneously. Daily volume is 2,500 cartons of various sizes . . . in a 12-hour period.

75% SAVING IN MAN HOURS . . . Prior to 1947,



All International Staple Machines feature the penetration control which permits either standard or concealed staple clinching as shown in actual size cross section view at left.

Uarco closed cartons by another method. Processing 2,500 cartons required 48 man-hours. Today, with an International Retractable Anvil Stapling Machine, it takes only 12 man-hours to close 2,500 cartons.

"HIGHLY SATISFACTORY" . . . Here's what John A. Tanovich, chief layout-material handling engineer has to say about International stapling equipment: "We have found your C2E carton stapling machine a highly satisfactory unit with the desired flexibility to staple any of our cartons to meet the packaging requirements of interstate shipments. When coupled with our system of conveyors, this stapling machine accounted for a minimum of \$20,000 per year as its share of packaging savings."

What's your closure problem? If you ship in corrugated or fibre containers, an International staple machine can close them better, faster and more economically. Write for detailed information.

a seal of security



INTERNATIONAL STAPLE & MACHINE CO.

808 Herrin Street, Herrin, Illinois
Distributors in principal cities

Circle No. 88 on Reader Service Card for more information

Vapor FROM Paper STOPs RUST.



PACKAGING COSTS CUT FROM \$4.95 TO \$1.37

Back when messy oil and grease coatings were used to ward off corrosion of diesel locomotive parts, the maker had headaches at both ends of the line.

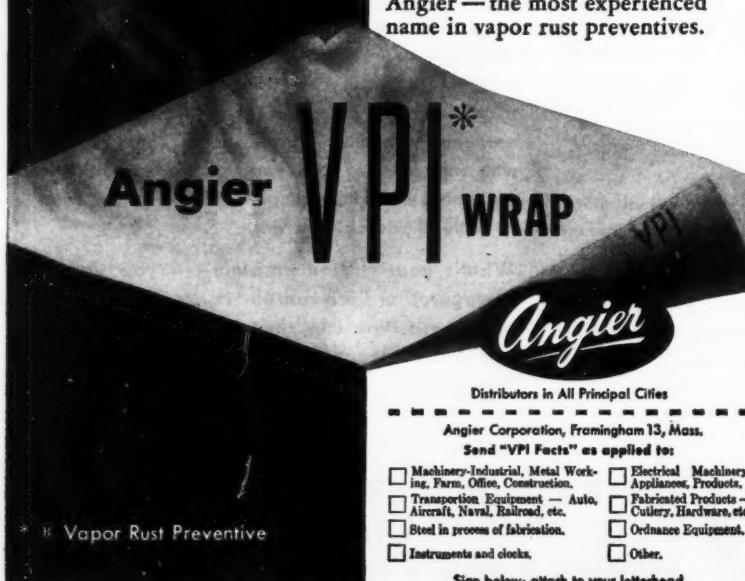
Packaging steps called for inflammable liquids, heavy handling equipment, air hoses, and varnish-like petroleum solutions. In those days, waxed paper and heavy wooden crates were "musts." At the railroad end, unpacking meant the same troubles in reverse; laborious "cleaning" was a costly chore.

Now, says the diesel firm, "packaging is a dream."

Large and small parts are protected only by a paper that gives off vapor. *It stops rust.* It is Angier VPI* Wrap.

A cylinder liner (see above) is simply put in a container with pieces of the paper. The lid on, VPI goes to work. Now cost of packaging is \$1.37—not \$4.95. The liner is ready-to-use when received. No "cleaning" to do.

If you store or ship metal parts or products, get "VPI Facts" from Angier—the most experienced name in vapor rust preventives.



plies—liquid tight. It is usually employed for packing liquids, although it can be used for semi-solids and heavy solids. Unless absolutely necessary, tight barrels should not be opened for filling, since leak-proof qualities may be damaged. Contents should be put in and removed from the barrel through the bung hole which might be located in the bilge or in the head of the barrel.

Manufacturers whose products (foodstuffs, patching plaster, powdered paint products, etc.), are sold in relatively small quantities, can make their selection of containers from a variety of small paper bags, cloth bags, paperboard boxes or tin cans. To speed up operations and cut down handling, high speed equipment is available for any of the types of containers just mentioned. For boxes and bags, the machines may be used for filling to exact measure, and for sealing by stitching, stapling, cementing, taping. Packaging machinery is also available in models which fabricate containers and then go on to fill and seal them. Printing devices may be used with machines to imprint messages on containers during the packaging and closing sequence. For cans, packaging machines often are used to fill, seal, and apply labels in a single sequence.

If yours is a problem of shipping bulk material from a manufacturing plant to processing plants, and sanitary conditions are of importance, you might be interested in one of several types of completely enclosed returnable metal containers which are available. This type container may be equipped with legs for fork truck handling, or with casters. In use, it is customary to fill these containers from hoppers or storage bins at the shipper's plant, close and seal them, transport to a storage area at the receivers plant, and when the material is needed, discharge directly into processing machines. Eliminated, is a great deal of unnecessary handling from shipping containers to storage and then from storage to production.

How
dam
had
chan
KIM
strea
proto
K
up to
again
yet
dents
the s

Re
fici
gate
Dep

*T. M.
A FOR

ally em-
although
tids and
ly neces-
not be
ak-proof
Contents
ed from
le which
age or in

products,
er, pow-
are sold
es, can
ers from
gs, cloth
in cans.
ut down
ment is
of con-
xes and
used for
or seal-
menting.
is also
abricate
fill and
may be
nt mes-
e pack-
or cans,
used to
a single

shipping
cturing
d sani-
rtance,
of sev-
ed re-
ch are
may be
truck
e, it is
rs from
e ship-
trans-
ceivers
eeded,
ng ma-
deal of
ipping
a from



Custom Protection - prevents shipping damage as no other packaging method known!

How often do *your* products arrive at their destinations scratched, cut or damaged in any way? Once a year — once a month — or oftener? If you had a single instance of damage in transit last year, it may be time to change to *custom protection* with Kimberly-Clark Interior Packaging — KIMPAK*. Companies like the Speed-Queen Corporation who revised and streamlined their packaging operations have found that nothing else protects so efficiently, so economically.

KIMPAK is soft, grit-free, easy to apply as wrapping paper. It will absorb up to 16 times its own weight in moisture within 30 seconds — protect against shock, scratching, pressmarking, vibration. KIMPAK is feather-light, yet gives more protection than most materials of far greater weight and density. Many concerns have found this an important factor in reducing the size and weight of their packages, due to recent postal rate increases.

Regardless of the product you manufacture, KIMPAK — in its many specifications — can be "tailored" to fit your particular needs. Today — investigate *custom protection* with KIMPAK. For complete information, write to Dept. B-6, Kimberly-Clark Corporation, Neenah, Wisconsin.



A Product of
Kimberly-Clark

Circle No. 90 on Reader Service Card for more information

*T. M. REG. U. S.
© FOREIGN COUNTRIES

FLOW • JUNE, 1952



*Here's how
to close*
**MULTIWALL
PAPER
BAGS**



Union Special Style
20100 H Bag Closing
Machine

FOR lower production costs . . . stronger, neater closures . . . ability to get out rush orders in a hurry, you can't beat Union Special Bag Closing Machines! Specially built to stand up under heavy production schedules, these machines provide the high output rates needed to meet modern competitive conditions.

In the Union Special line, it's easy to find the right unit to meet your requirements. **ASK FOR RECOMMENDATIONS.**

SEND FOR THIS BULLETIN!

It's easy to find just the right unit to meet your individual needs in Union Special's big line of bag closing machines. Ask for a copy of Bulletin No. 200, "UNION SPECIAL FILLED BAG CLOSING MACHINES."



Union Special
MACHINE COMPANY
415 N. FRANKLIN ST., CHICAGO 10, ILLINOIS

Circle 91 on Reader Service Card

132

**A SURVEY YOU WON'T
WANT TO MISS . . .**

A very special two-part survey article is planned for the Packaging & Shipping Section for the months of July and August. We are sure that the great majority of our readers will want to pay special attention to these reports.

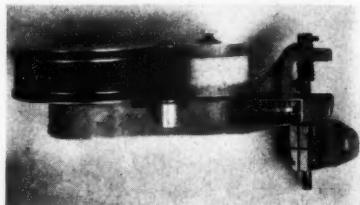
The first article, scheduled for next month, details the use of Aluminum Foil for packaging parts and items for the military. We have received many letters asking for information on this subject and we believe that next month's story will answer the problems posed.

You will find out how to prevent moisture, dirt, etc., from causing damage to your products after they leave your plant. You will also discover how packaging operations may be speeded to reduce your costs.

The second installment of this survey, which will be found in August FLOW, will tell all about the uses of Aluminum Foil for packaging civilian products. If you have a problem of keeping foodstuffs fresh, of keeping metal parts free from rust and tarnish, or other similar problems, you won't want to miss this survey.

Circle 93 on Reader Service Card

**Add the "WHIPPET"
MARKER to your
Conveyor Line....**



Automatically dates, codes, or marks production runs of cartons, packages . . . readily adapted to your present conveyor lines.

Friction between Marker and moving package or carton will imprint date, code or any other information. It will automatically spot-print legend. In operation the printing drum spot-prints, turns immediately in $\frac{1}{2}$ revolution or less to a positive stop; then is ready to repeat the cycle. There is no oscillation of the printing drum.

Inking is through a felt roller that has a self-contained reservoir.

Uses interchangeable rubber type.

Used by candy manufacturers, distillers, oil companies, food packers, etc., to mark filled bags, cartons, boxes, rolls, cans, etc.

Send for "Free" Catalogue

We make machines to print corrugated cartons and multiwall bags that are filled or flat.

**THE INDUSTRIAL MARKING
EQUIPMENT COMPANY, INC.**
454 Baltic Street, Brooklyn 17, N. Y., Dept F
Main 4-2601

Can You Use These?



Xpendo-Pac
EXPENDABLE FIBRE PALLETS

**BUILT TO YOUR
SPECIFICATIONS**

* Single faced * Double faced
* Single faced with reinforcement (as illustrated).

In any dimensions . . . Central Fibre Pallets can be produced to meet any shipping or storing requirements.

Write for samples, prices, and further information.

Xpendo-Pac are made under patents owned by the Addison-Simmons Corp. of Racine, Wis.

★ Rugged, lightweight, economical, one-way corrugated pallets for more efficient storage and shipping. Investigate the possibilities of using these units in solving your materials-handling problem for either civilian or government orders.



Corrugated Containers
CENTRAL FIBRE PRODUCTS CO., INC.
130 JERSEY STREET • QUINCY, ILLINOIS • PHONE 87-1111

Circle No. 92 on Reader Service Card for more information

JUNE, 1952 • FLOW

NEW PACKAGING & SHIPPING EQUIPMENT . . .

(Continued from page 111)

place during filling. To release, a semi-circular release bar is pushed up, allowing the bag to drop to a conveyor or skid.

Circle No. 193 on Reader Service Card for more information

Sealing Machine—*Amsco Packaging Machinery, Inc.*

Amsco Packaging Machinery, Inc. has developed a high speed automatic jaw sealing machine. Heat, pressure, and dwell time are all said to be fully controlled automatically.

Maximum heat penetration to inner sealing bag surfaces is achieved by use of cartridge type hermetically sealed heating elements mounted in both sealing jaws. Heat is controlled and instantly adjustable to the requirements of the material being sealed by a sensitive dial type thermostat.

Circle No. 194 on Reader Service Card for more information

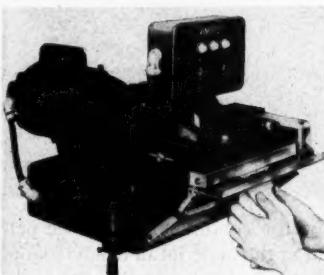
Counting and Packaging Machine—*Inter-Lakes Engineering Co.*

A machine, called the Weight-O-Pack, which counts and packages by weight various shaped small parts such as washers, nuts, pins, etc. has been placed on the market by Inter-Lakes Engineering Co. It is designed to speed up packaging and to eliminate errors in counting. The various shaped parts are simply placed in a three-cubic ft. hopper under which is a vibrating unit for the purpose of processing the work into the packages. The packages are placed on a platter of balance-type scale which controls the flow of material. The scale de-energizes the vibrating unit to stop flow of parts.

Circle No. 195 on Reader Service Card for more information

Brick Package Unit—*General Container Corp.*

Safe and economical handling, shipping and warehousing of bricks is reportedly made possible through use of the Albaco Brik-Pak of the General Container Corp. Procedure for loading begins with insertion of corrugated pallet base in metal form. Bricks are inserted in corrugated base, leaving openings for forks. Flaps of corrugated pal-



sealing jaws. Heat is controlled and instantly adjustable to the requirements of the material being sealed by a sensitive dial type thermostat.

Circle No. 194 on Reader Service Card for more information

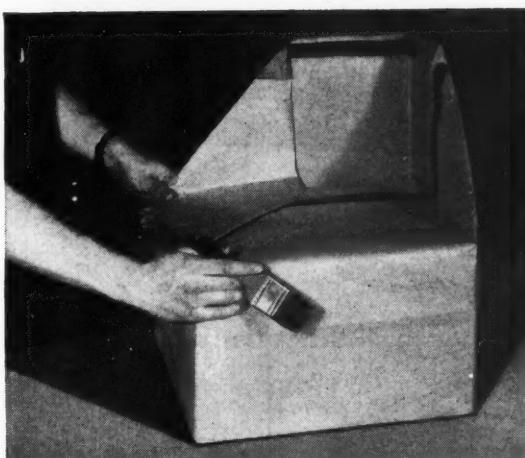
Counting and Packaging Machine—*Inter-Lakes Engineering Co.*

A machine, called the Weight-O-Pack, which counts and packages by weight various shaped small parts such as washers, nuts, pins, etc. has been placed on the market by Inter-Lakes Engineering Co. It is designed to speed up packaging and to eliminate errors in counting. The various shaped parts are simply placed in a three-cubic ft. hopper under which is a vibrating unit for the purpose of processing the work into the packages. The packages are placed on a platter of balance-type scale which controls the flow of material. The scale de-energizes the vibrating unit to stop flow of parts.

Circle No. 195 on Reader Service Card for more information

Brick Package Unit—*General Container Corp.*

Safe and economical handling, shipping and warehousing of bricks is reportedly made possible through use of the Albaco Brik-Pak of the General Container Corp. Procedure for loading begins with insertion of corrugated pallet base in metal form. Bricks are inserted in corrugated base, leaving openings for forks. Flaps of corrugated pal-

Get these Better Water Resistant Glues
that Meet Government Specifications

FREE, up-to-the-minute Paisley Laboratory Reports on highly efficient water resistant Adhesives that meet government requirements are ready for you now! Get the newest scientific data and complete information about the Glues you'll need for defense work. Paisley

Laboratories have developed and perfected a series of modern Adhesive formulae which comply with the requirements of such specifications, as, JAN-P-101, JAN-P-120, JAN-P-133, JAN-P-140, and UU-T-81c. As new government Adhesive specifications are completed, definite recommendations will be offered by our skillful laboratory staff.

Leading users of Adhesives from coast-to-coast depend upon PAISLEY Scientific Service for all their civilian and defense needs. They know that regardless of serious material shortages, they'll always get quick shipment of an Adhesive that will prove satisfactory in every way! Tell us about YOUR needs. Use the convenient coupon below.

TEAR OUT . . . PASTE ON LETTERHEAD
AND MAIL TO US TODAY!

Paisley Products, Inc.
1770 Canalport Ave., Chicago 16

Gentlemen: Send us the Laboratory Reports and Data Sheet indicated below.

#676—complies with JAN-P-101, JAN-P-140, and JAN-P-120.
 #688—complies with JAN-P-101

#3020—complies with JAN-P-140

#3850—complies with UU-T-81c

#3354—complies with JAN-P-133
_____ indicate Gov't. Spec. if not shown above.

ADHESIVE OPERATION DATA SHEET
(You fill in and return for laboratory recommendation.)

COMPANY _____

ADDRESS _____

BUYER'S NAME _____

PAISLEY PRODUCTS INCORPORATED

Manufacturers of Glues, Pastes, Resin Adhesives, Cements and Related Chemical Products
1770 CANALPORT AVE., CHICAGO 16, ILL. • PHONE CANAL 6-2219
630 W. 51ST STREET, NEW YORK 19, N.Y. • PHONE COLUMBUS 5-2860

Circle No. 94 on Reader Service Card for more information

Circle No. 67 on Reader Service Card for more information

MARSH
Delivers The Goods!

Hand Operated STENCIL MACHINE

Electric STENCIL MACHINE

FOUNTAIN BRUSH

STENCIL INK

OIL BOARD

STENCIL OIL BOARD

FELT-POINT PENS

MARSH

MARSH STENCIL MACHINE CO. • 67 MARSH BLDG. • BELLEVILLE, ILL., U. S. A.

FORCE

CASE NUMBERER

... the only
Machine
of its kind!

Indispensable in Shipping, Warehousing, Assembly Line, etc., for marking on wood, canvas, and other rough surfaces. Stamps large figures on cartons and cases. Numbers bills of lading and other paper forms. Self-inking, consecutive, duplicate, repeat. Sturdy aluminum frame. 6 and 7 wheel capacities.

WRITE FOR CATALOG E

THREE QUARTERS OF A CENTURY'S SERVICE

W.M. A. FORCE
& COMPANY, INCORPORATED
64 White Street, New York 13, N.Y.

Circle No. 95 on Reader Service Card for more information

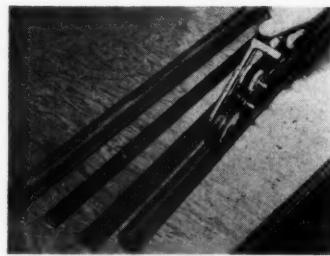
134

let base fold flat over first tier of bricks and remainder of load is stacked on flaps. Corrugated sheets cover complete load and are strapped in place. The completed load contains 500 bricks. It is said to be easily and safely handled by fork truck.

Circle No. 196 on Reader Service Card for more information

Continuous Marker—Adolph Gottscho, Inc.

Rolamarker 601, a new high-speed manual device for marking material, purchase order or other desired information on bars, tubes, rods and sheets of metal, plastic, glass, wood, rubber, composition, etc. has been introduced by Adolph Gottscho, Inc. It is said to make possible imprinting a permanent legend $3/16$ " in. deep by eight in. long in a continuously repeated pattern over the entire length of the material in one quick operation. It is claimed that this full-length imprint ordinarily can be made in less time than is required to paint rod and bar ends.



Circle No. 197 on Reader Service Card for more information

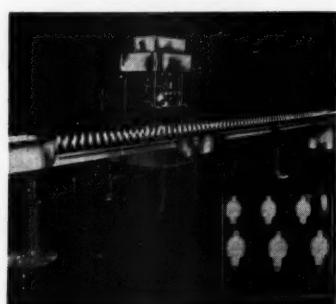
Open Channel Flow Meter—Bristol Co.

The Bristol Co. has announced a new line of open channel flow meters for measuring, recording, and controlling the flow of water, sewage etc. Flow is determined by measuring the head of liquid flowing through a flume or over a weir in the flow channel. This measurement of head is interpreted by means of a cam, cut to the equation of the weir or flume, into terms of flow.

Circle No. 198 on Reader Service Card for more information

Rotary Filling Machine—MRM Co.

Odd shaped containers that do not stand upright now can be filled at high speeds according to MRM Co. That company's automatic rotary filler utilizes a special conveyor and rotary filler. The conveyor is equipped with specially designed adaptors spaced over the entire length of the conveyor which firmly hold the container in place while filling. All other operations such as capping, insertion of plugs and code dating are accomplished on the same conveyor, automatically.



Circle No. 199 on Reader Service Card for more information

nder of
complete
and con-
handled

nation

ice for
infor-



ed pat-
ick op-
t ordi-
paint

ation

chan-
rolling
ed by
flume
ent of
uation

ation

it now
That

lating
lly.

ation

LOW

NEW PRODUCTS . . .

(Continued from page 39)

Heavy Duty Wheel Conveyor—Rapids Standard Co., Inc.

Increased load capacity is claimed for this heavy-duty wheel conveyor announced recently by Rapids-Standard Co., Inc. It has 3½ in. deep channel frames of 12-gauge steel for extra strength and rigidity. Each lane of wheels is reinforced with a steel center band which supports the axles at the point of greatest strain. It is manufactured in five and 10 ft. sections 12 and 18 in. wide and 45 and 90 degree curves. It is available with either tubular or channel-type guard rails, or may be used without guard rails for handling materials wider than the conveyor.

It is manufactured in five and 10 ft. sections 12 and 18 in. wide and 45 and 90 degree curves. It is available with either tubular or channel-type guard rails, or may be used without guard rails for handling materials wider than the conveyor.

Circle No. 164 on Reader Service Card for more information

Electronic Door Opener—H. W. Crane Co.

This electronic door operator opens and closes plant doors by remote control. Specifically designed for fork trucks, delivery trucks, fleet cars and other vehicles that must pass through the same plant door many times, it operates by pushing a button located on the dash of the truck, or on the side of the seat in convenient reach of the driver. Simplicity of installation is one of



the features emphasized.

Circle No. 165 on Reader Service Card for more information

Drop-Bottom Container—Roura Iron Works, Inc.

A drop bottom container permitting gravity flow to bring parts directly to the operator's work point has been developed by Roura Iron Works, Inc. This is said to result in a saving in the time and fatigue, formerly affecting the worker's efficiency in bending over and reaching for parts. Solid sides of the container have no corrugations or projections to catch parts and prevent bottom from dropping. The containers are designed for stacking to save

space.

Circle No. 166 on Reader Service Card for more information

make **light work**
of **HEAVY LABOR**

in feeding presses



New
SERVICE
press feed

electraulic liftable

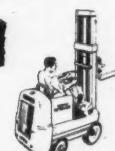
The Service Press Feed Electraulic Liftable quickly raises heavy loads to press level, saving time and manpower in press feeding and in receiving processed pieces.

Operated by electrically-controlled hydraulic power, these durable new Liftables are designed for continuous operation with production equipment. They are portable, with rugged Service Forgeweld Casters as running gear. Available for operation with a press through one set of controls for automatic feeding. Capacities up to 15 tons.

Write for Circular 429

Keep **MOTOWLIFT** in Mind!

It's the fork lift truck so good that military needs take all we can make. Soon, we hope, you will be able to buy it again—the best truck for most jobs in most plants. Keep Motowlift in mind!



SERVICE CASTER & TRUCK CORP.



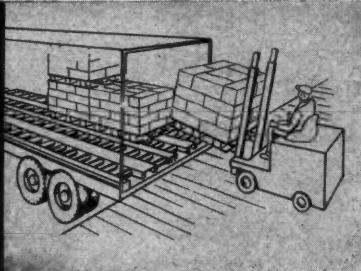
Executive Offices: Albion, Michigan

Plants at Albion, Michigan and Somerville 43, Mass.
See Your Classified Telephone Directory for Nearest Distributor

Circle No. 96 on Reader Service Card for more information

Circle No. 98 on Reader Service Card for more information

**ULTIMATE
CARGO
LOADING
SYSTEM
for
PALLET**



**A REVOLUTIONARY METHOD
TO LOWER DISTRIBUTING COSTS**

• This new method of transporting palletized shipments consists of four rows of aluminum rollers set in an aluminum structural frame. These rollers act as removable inserts between sections of aluminum diamond plate.

Loaded pallets are rolled into position, the rollers are lowered by releasing hydraulic pressure, depositing pallet firmly and securely on diamond plate framework. To unload, rollers are raised hydraulically.

Entire unit easily installed in new or present trucks. Built to handle all kinds of pallets, or skids. Economical and efficient.

FREE!



MAIL THIS COUPON FOR FULL DETAILS

ISLAND EQUIPMENT CORP. Dept. F6
27-01 Bridge Plaza North
Long Island City 1, N. Y.
Please send Bulletin CLS-1A describing the
ULTIMATE CARGO LOADING SYSTEM
for **PALLETS**.

COMPANY.....

BY.....

ADDRESS.....

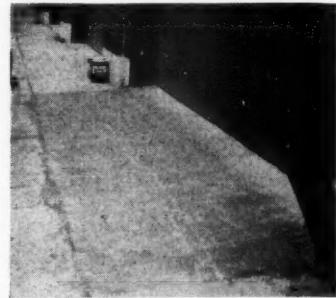
CITY..... ZONE..... STATE.....

floor space and can be used for storage purposes. Besides being easily accessible to fork trucks, the stacking strips that are welded at four points on the top are designed to allow loops for overhead lifting equipment. Drop bottom opening is 13 in. high by 31½ in. wide. Box shown has overall dimensions of 36 in. wide by 48 in. long by 39 in. high. Capacity is 3/4 yd., and weight is approximately 400 lb. Other sizes can be built to meet requirements.

Circle No. 166 on Reader Service Card for more information

Floor Resurfacer—Flexrock Co.

Ruggedwear resurfacer is said to be ideally suited for a variety of floor repair jobs. As a patch, it can be applied without chipping or chopping; as a complete overlay it can be used over almost any type old floor, according to the manufacturer, Flexrock Co. It is recommended for use in 1/2 in. thicknesses so as not to raise floor level appreciably, nor to interfere with machinery bases or other permanent fixtures. The maker claims that the material is easily applied, costs little and saves valuable time in the plant by avoiding floor repair delays, inconvenience and accidents.



Circle No. 167 on Reader Service Card for more information



PENNY WISE

AND POUND FOOLISH!

Save a penny!—Lose a dollar? Yes, the country over there are literally thousands of materials handling equipment buyers who are doing just that! Those immediate 'penny-savings' keep them up on top for awhile, but when time runs its race these buyers find they're high and dry... Those pennies they saved turn into dollars lost... lost due to excessive maintenance costs.

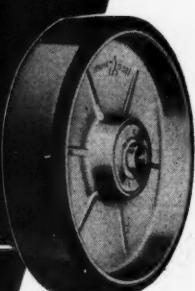
Smart, "pound-wise" buyers are setting new records in reduced maintenance costs with Aerol's quality-plus equipment. Positive pressure sealed hubs prevent foreign matter from attacking and destroying vital bearings. Timken tapered roller bearings guaranteed greater rollability... and Aerol's 'lubricated for life' wheel frees maintenance men for other important tasks.

CONCENTRATE ON

aerol

AEROL CO., INC. 2424 SAN FERNANDO ROAD • LOS ANGELES 65, CALIFORNIA

NO WHEEL ROLLS  LIKE AN AEROL



Circle No. 97 on Reader Service Card for more information

Besides
strips
ned to
bottom
wn has
39 in.
ly 400

ation

ed for
plied

manent
easily
ant by
dents.

ation

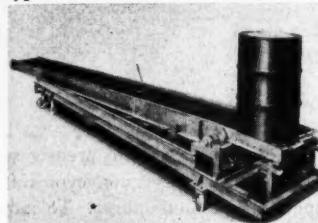
Stock Racks—Equipment Mfg. Co.

Stock racks that help you stack stuff like stampings and motors to save valuable floor space are made in twelve standard sizes by Equipment Manufacturing Company. The rack's members are square welded tubular steel, with removable end frames for end loading. The longitudinal hardwood planks and provisions in the cross members make it easy to bolt the racks down to a solid floor. Casters can be attached to the racks feet to make them movable.

Circle No. 168 on Reader Service Card for more information

Drum Handling Belt Conveyor—Alvey Conveyor Mfg. Co.

A portable, power driven, belt conveyor of the slider bed type has been introduced by the Alvey Conveyor Mfg. Co.



It is especially adaptable for unloading drums from either box cars or gondola cars, according to the manufacturer. For use with gondola cars, the boom is raised by a hydraulic lifting device. The boom may be set at any height between the maximum and minimum points of vertical travel. A short roller apron is provided to receive the

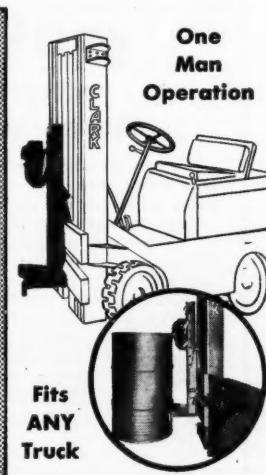
drum as it is lowered from the car.

Circle No. 169 on Reader Service Card for more information

THE LIFT-O-MATIC POWER TRUCK ATTACHMENT for DRUM HANDLING

• SIMPLE

Attach or remove WITHOUT TOOLS in a matter of minutes.



• AUTOMATIC

Raising or lowering truck lift cylinder provides automatic pick-up and release. Additional operator controls unnecessary.

• LOW COST

Move, tier or place drums easily and quickly without pallets or dunnage.

Write for
Details

MARVEL INDUSTRIES, Inc.
2226 CLEVELAND ST., EVANSTON, ILLINOIS

Circle No. 99 on Reader Service Card for more information
FLOW • JUNE, 1952



VERSAVEYOR

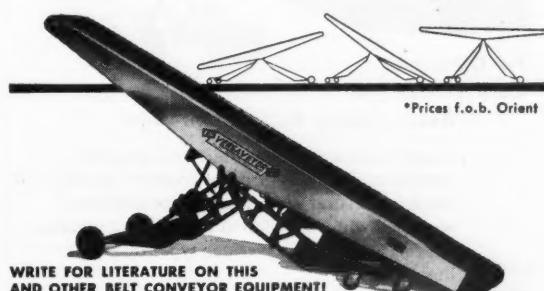
LOW-PRICED*. A 13-ft. unit without either undercarriage \$343; add \$80 for wheel undercarriage, \$93 for caster undercarriage. (See photo below.)

LIGHT-WEIGHT. Whether it's a 13, 15, 17 or 19-ft. length, the Versaveyor is easy to handle 'most anywhere. For example, the 13-ft. unit without undercarriages weighs only 150 lbs.

EASY-TO-HANDLE. From a horizontal low of 22 in. to a height at either end of 9 to 14 ft. (45-degree angle), the Versaveyor is safe and stable. Unit load, 150 lbs.; distributed load, 300 lbs.

WELL-BUILT. Box-type frame; heat-treated aluminum alloy.

MANY USES. Out of box cars to gravity conveyors. Into trucks. Up to second floors. Flat on stairways. Will pass through 30-in.-wide door with undercarriages attached. Has 12-in.-wide belt.

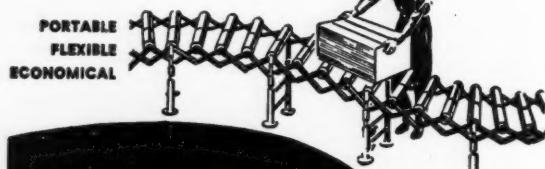


WRITE FOR LITERATURE ON THIS
AND OTHER BELT CONVEYOR EQUIPMENT!

BELT **THE BELT CORPORATION**
7406 STAHL ROAD ORIENT, OHIO

Circle No. 100 on Reader Service Card for more information

Quick and Convenient Materials Handling



fmc ACCORDION GRAVITY CONVEYOR

Makes Box Handling Easy

EXTENDS to lengths required, up to a maximum of 9½ feet.	BENDS to avoid obstructions or to conform to loading requirements.
CONTRACTS to 3½ feet. Can be turned over and rolled to storage by one man.	RAISES or LOWERS from a minimum height of 20½ inches to a maximum height of 28 inches. Legs in special lengths available.
CURVES around corners or posts. Split rollers keep boxes on conveyor without side rails.	RUGGED construction. Steel roller, staggered wheel or side wheel available. Aluminum type models subject to availability of materials.

fmc CLAMP TRUCKS

For Quick and Easy Handling of Boxes, Crates, Baskets and Lugs

Clamp arms with replaceable jaw tips grip containers firmly. Foot pedal controls opening and closing of clamp arms. Rugged construction, equipped with rubber-tired ball-bearing wheels. Models available for various types of box handling.



FOOD MACHINERY AND CHEMICAL CORPORATION
PACKING EQUIPMENT DIVISION
RIVERSIDE, CALIFORNIA

NM-26

Circle No. 101 on Reader Service Card for more information

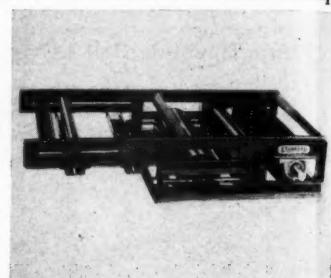
138

drums, or it may be used to transfer drums to another conveyor. The conveyor is 24 ½ in. wide between side frames and is 22 ft. from center to center of pulleys. Maximum inclination of the boom is 11° from horizontal. Belt speed is approximately 40 ft. per min. Power is furnished by a one horsepower motor through an enclosed speed reducer.

Circle No. 169 on Reader Service Card for more information

Standard Conveyor Units—Standard Conveyor Co.

Shown here is one of five parts of the Standard Handidrive "1000". This unit is a center drive and takeup assembly for mounting underneath conveyor frame. It drives the return strand of belt. The Handidrive "1000" is said to be a companion to the Handidrive "400" of Standard Conveyor Co. A heavier design, it will handle a 1000 lb. belt pull, as compared to its predecessor's 400 lb. Total load it will pull on a belt conveyor 150 ft. long is 15,000 lb., reports the manufacturer. To reduce friction, precision bearings are used at all drive and takeup shafts.



Circle No. 170 on Reader Service Card for more information

TRAFFIC NEVER STOPS

when you repair your floors with PERMAMIX.



Easy to apply—sets instantly—long wearing for year around use indoors or out—WILL NOT FREEZE—can be stored indefinitely and used in any temperature—lowers maintenance costs amazingly.

Here's all you do: Clean hole in any type floor, spread primer supplied in drum, fill in with PERMAMIX, tamp and dust with cement or floor dust, resume traffic immediately. It's that easy, for PERMAMIX feather edges and no cutting or chipping is required. No skilled labor is necessary, you

need no special equipment, you have no mixing, waiting or production delays when you repair or patch your floors the easy, fast PERMAMIX way. Comes in handy, durable 50 lb. net weight drums.



Write or call for full details

PERMAMIX

PERMAMIX CORPORATION

226 N. La Salle St. Cent. 6-1785 Chicago 1, Illinois

Circle No. 102 on Reader Service Card for more information
JUNE, 1952 • FLOW

Four Post Lifters—Service Caster and Truck Corp.

The four post lifter shown here was designed by Service Caster and Truck Corp. for level-to-level and floor-to-floor movement of trucks and skids, materials, heavy parts, etc. in plants or warehouses. The electric - hydraulic powered lifters have "deadman" type pushbutton controls, expanded metal platform guards, safety tread

non-skid platforms, positive stops to prevent overtravel of rams, overload relief in the hydraulic system, and post rings that lock platform to post if chain should fall. Models are available in capacities from 2000 to 12,000 lb. and platform sizes from 5' x 5' to 12' x 12'. Lifts range from five ft. to 17 ft. at speeds from eight ft to 23 ft. per min.

Circle No. 171 on Reader Service Card for more information

Conveyor Belt for Abrasive and Oily Materials

—Main Belting Co.

Abrasive and oily materials can be conveyed easily and economically with Armadillo Protecto-Coat Oil Buff Conveyor Belting, says the manufacturer, Main Belting Co. The belting is made in either of two duck weights: 37 1/2, or

DOWNS SAFETY GRABS
...GRIP ANYTHING!

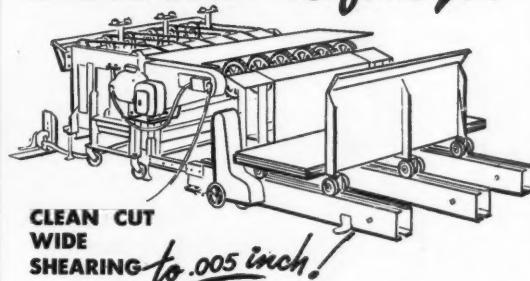
FOR CRANES AND HOISTS...
Material lifting equipment will do more work—faster, easier—when you have the proper "grabs" for every type of load. No matter what your hoists are handling—pipe, rails, drums, plate or structural steel, stone, timber, boxes or odd-shaped objects of any description—there's a DOWNS Safety Grab that will enable you to do it faster, easier and safer. Learn new short cuts to greater efficiency for YOUR plant with DOWNS' complete line of Safety hoist grabs!

Write for Free Illustrated Catalog 200 Today!

DOWNS CRANE & HOIST CO.
MECHANICAL ENGINEERS
540 W. VERNON AVENUE • LOS ANGELES 37, CALIF.

Circle No. 103 on Reader Service Card for more information
FLOW • JUNE, 1952

FRIED Liftveyor*



Efficiency goes up and costs go down when a FRIED LIFTVEYOR is teamed to your shear. This unique device provides sturdy "flex free" support of all sheet: Iron, Stainless Steel, Bronze, Aluminum . . . positions for cleaner cutting at closer tolerances . . . conveys sheared lengths beyond shear frame, without marring, to FRIED Stacker, shop truck or skid.

Ball point plungers that support sheet are pneumatically actuated by foot treadle synchronized with your shear. Sheared strip lowers to conveyor — plungers return for next support assignment.

**Shear FASTER, SAFER,
MORE ECONOMICALLY
with FRIED
STRIP HANDLING EQUIPMENT**

FRIED
Stripveyor Patented

**AUTOMATICALLY PICKS UP AND CONVEYS
STRIPS BEYOND SHEAR BED**

Get full capacity service out of your shear and get it *without risk . . . with less manpower*. Employ a FRIED STRIPVEYOR to pick up and carry strips beyond the shear bed *automatically as fast as your shear can cut*. *Can pay for itself in as little as 1000 working days!*

As each section is sheared, it slides down an adjustable pick-up chute which butts against shear bed . . . As sections are delivered to table they slip back and are caught by toggles; then, are picked up by horizontal angles connected to endless link chains. Round steel fingers reach below table deck—pushing material in front of them. Material is raised to desired point, then dropped to a Stacker, shop truck or skid.

* Patent Pending
Investigate the complete line of Fried Strip-Handling Equipment
... Write for descriptive literature.

FRIED STEEL EQUIPMENT MFG. CORP.
528 EAST 119TH ST., NEW YORK 35, N. Y.

Circle No. 104 on Reader Service Card for more information
139

Circle No. 105 on Reader Service Card for more information

LOAD CAPACITY
750 Pounds
LIFTING HEIGHT
52 Inches

**LIFT and
MOVE**
Your DRUMS
CRATES
DIES
JIGS and
OTHER LOADS
with TIME SAVING
SPEED and SAFETY

Let BIG JOE'S smooth working,
powerful HYDRAULIC LIFT keep
your production, shipping and re-
ceiving... "ON THE MOVE"

With Big Joe's trim design you
avoid moving useless dead
weight around. Foot pedal
operation is for simpler and
easier. All moving parts are
ball or roller bearing equipped.
Positive acting wheel brakes
afford maximum safety. Solid
rubber tires (no hollow core).
Steel or rubber front casters
optional. Big Joe models with
platform lift also available.
Ask for literature showing all
models... A demonstration can
be arranged in your own plant.
PROMPT DELIVERY

Adjustable-
Fork Lift (as
illustrated)
\$256.50
F.O.B.
Chicago

(Platform Lift
\$236.50 F.O.B. Chicago)

BIG JOE MFG. 184 N. Franklin St.
co. Chicago 6, Illinois

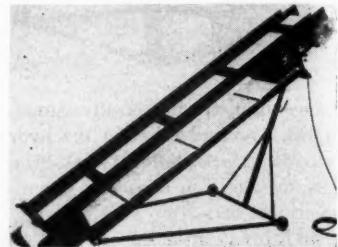


39 oz. It is an oil buff, stitched canvas belt with an extremely hard, glass-like, yet flexible coating, it is claimed. This coating sheds oil.

Circle No. 172 on Reader Service Card for more information

Cleated Belt Conveyor—*Rapids-Standard Co., Inc.*

A cleated belt conveyor designed for handling of light stampings, screw machine products, scrap and similar press-room and machine-shop material is being manufactured by Rapids-Standard Co., Inc. The unit is called the Press-Veyor, Jr. It is available in four, six and eight-ft. lengths and four, eight and 12 in. belt widths for handling a wide range of products. The 12-gauge steel bed and guard rails are formed in one piece to prevent parts handled from catching and being damaged. It is available with woven cotton, Neoperen, or waterproofed woven cotton belts with steel cleats spaced on 24-in. centers. Standard speed is 55 ft. per min. A choice of single or three-phase motors for 115 or 220/440 voltage is offered.



Circle No. 173 on Reader Service Card for more information

RE-NU TOP STEEL-BOUND SKID PLATFORMS



BUILT
TO LAST
A LIFETIME

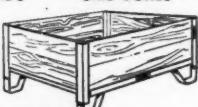
500 LB. LOAD
UP TO 10 TONS

Designed to fit your loads and equipment. Plain bolted construction for use with hand lift trucks or bolted and welded under frame with armored ends for rough handling by powered trucks. Special purpose skids can be equipped with end racks, shelves, stake pockets, crane hooks, rounded corners and other special features.

SECTIONAL BINS

ROLLAWAY SKIDS

SKID-BOXES



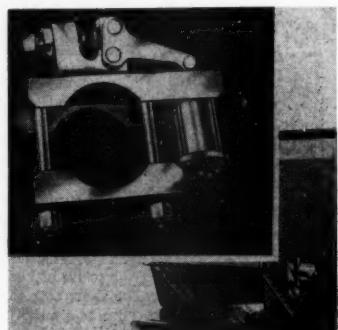
THE LANHAM
COMPANY

1403 S. 12th St., Louisville, Kentucky

Circle No. 106 on Reader Service Card for more information
140

Air Operated Vibrator Clamp—*Viber Co.*

This clamp is designed to speed up attachment of external vibrators. The air operated mounting clamp is said to be extremely advantageous when only short periods of vibration are required. No lengthy installation is necessary. Air pressure applied first to the clamp causes specially designed jaws to grip on to a suitable steel member such as an exposed angle. This requires only a few seconds and air can be applied to the vibrator immediately for whatever period vibration is necessary, according to the manufacturer, Viber Co. Suggested applications include: tunnel lining where the vibrator can be moved about at will; unloading trucks where heretofore, lengthy time required in attachment of the vibrator to the load made vibration impracticable.



Circle No. 174 on Reader Service Card for more information

Magnesium Cement Flooring—*Flash-Stone Co., Inc.*

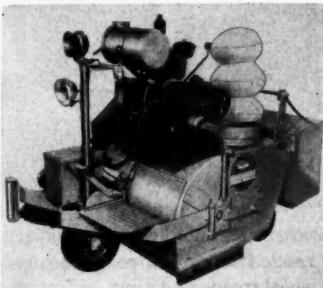
Flash-Stone Co., Inc. manufactures a cement which is a combination of magnesium chloride and magnesium

oxide with certain fillers and fine aggregates. It is said to be a cement which sets within a few hours and forms a hard, dense, durable mass with excellent characteristics as a flooring material. It is supplied in dry form to be mixed on the job to a mortar consistency, then spread, leveled and finished by troweling. Among the advantages claimed for the product, named Magna-Crete, are its comparatively light weight, good bonding qualities, resistance to oils and greases, granite hard surface, silence, moderate price range, high structural strength, long life and low maintenance cost.

Circle No. 175 on Reader Service Card for more information

Power Sweeper—Wilshire Power Sweeper Co.

Wilshire Power Sweeper, Model 1000-S is designed for multi-purpose service on all types of floor and pavement surfaces, both exterior and interior. Features cited by the manufacturer, Wilshire Power Sweeper Co., include: easy, efficient operation; simple, low-cost maintenance; side-sweeper; floodlight; tail light; side spot light; horn; self-starter motor; and automotive transmission with three forward and one reverse speeds. It is said to eliminate



starter motor; and automotive transmission with three forward and one reverse speeds. It is said to eliminate

Hoist Away!



2426 East Franklin Ave. • Minneapolis 6, Minn.

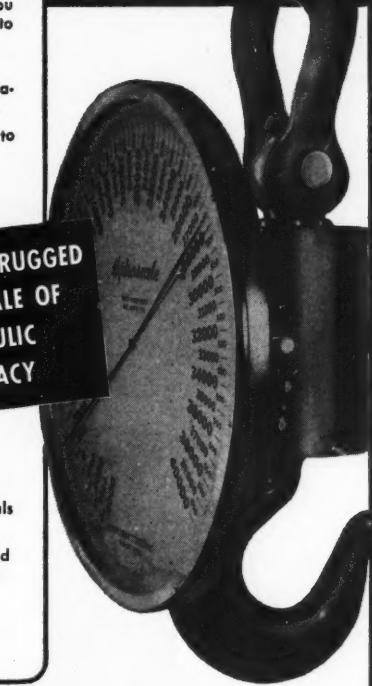
Circle No. 108 on Reader Service Card for more information
FLOW • JUNE, 1952

HYDROSCALE SIMPLIFIES WEIGHING!

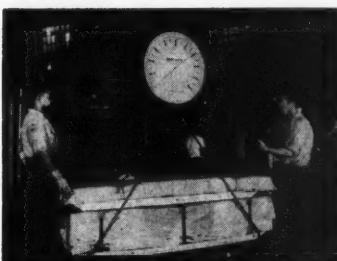
- Weighs as you lift the load to move it.
- Eliminates weighing station tie-ups.
- Models 500 to 200,000 pounds.

A COMPACT RUGGED CRANE SCALE OF HYDRAULIC ACCURACY

- 12", 24" and 30" dials
- Combination kilogram and pound dials
- Tilt face models for high level reading



Protects you against loss by making weighing easy and effortless. Encourages careful checking of materials in and out of plant and materials in process at production stages. Repeat orders from users in all types of industry testify to its usefulness and versatility.



Saves time in:
Receiving
Shipping
Inventory
Processing
Inspection

HYDROWAY SCALES, INC.

20628 W. 8 Mile Rd., P.O. Box 4754 Detroit 19, Mich.

Circle No. 107 on Reader Service Card for more information



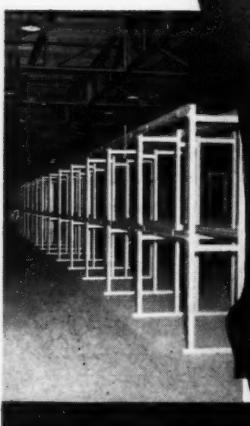
Write for our catalog of materials handling equipment.

Well Stacked!

Palletized goods is well stacked when it's stacked on strong, flexible, space conserving E. M. I. prefabricated pallet racks. They save handling time by permitting removal of low level material without disturbing that above.

**EQUIPMENT
MFG. INC.**

21552 Hoover Road
Detroit 5, Michigan



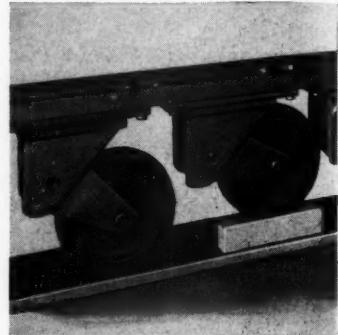
Circle No. 109 on Reader Service Card for more information

need for sprinkling or sweeping compounds to lay dust. Dust-laden air is drawn from the top of the hopper, and is discharged through a cyclone-type spinner which separates the dust from the debris.

Circle No. 176 on Reader Service Card for more information

Knee-Action Caster—All Steel Welded Truck Co.

The Clark Duoflex Knee Action Caster is designed to give maximum protection from shock. This protection comes from a two-in. vertical wheel motion when obstructions are met, according to the manufacturer, All Steel Welded Truck Co. Both standard swivel and rigid type casters are available in wheel sizes from six in. up to 12 in. and larger. Rubber, neoprene, steel, composition or pneumatic tires are also available. Weight capacity of the standard casters range from 50 lb. per caster up to 1500 lb., depending on wheel treads and sizes.



Circle No. 177 on Reader Service Card for more information

Save time! Prevent accidents!

**LIFT AND DUMP
MECHANICALLY**

**BAGS
BARRELS
DRUMS
BOXES**

REDUCE HANDLING COSTS with a CESCO Dumper. It handles up to 100 loads per hour; has a lifting cap. ranging from 100 to 1500 lbs. Both single- and multi-purpose portable models are built in standard dumping heights from 5 to 12 ft. Stationary models up to 16 ft. dumping heights. Push button controlled. Write for catalog.

COLSON EQUIPMENT & SUPPLY CO.
1317 Willow Street • Los Angeles 13, California



Circle No. 110 on Reader Service Card for more information

Heavy
The
of a n

maxi
800-4
has
Drive
bevel
feren
Timk

Circ
Tab
Ta
ment
36 i

in
for

0
FLE
C
FL

y dust.
er, and
ch sep-

ation

ned to
tection



Heavy-Duty Electric Tractor—*Mercury Mfg. Co.*

The Mercury Mfg. Co. has announced the availability of a newly-designed heavy-duty electric tractor for use in automotive, aviation, railroad, metalworking, food, textile and other industries where material handling is a significant factor. The new unit is powered by two high-capacity series-wound enclosed motors capable of delivering 800 lb. normal and 5500 lb.

maximum drawbar pull. It has been designated Model A-800-4. It has four travel speeds in either direction, and has directional control mounted on the steering column. Drive axle assemblies consist of double-reduction, spiral bevel and spur gear units with standard four-pinion differential. Drive shafts are full-floating and wheels are Timken-bearing mounted.

Circle No. 178 on Reader Service Card for more information

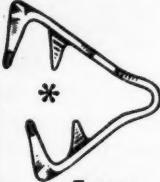
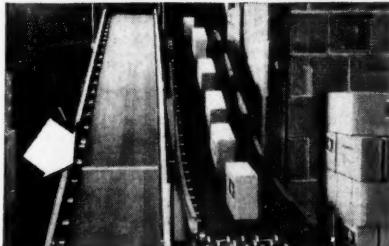
Table Conveyors—*Sage Equipment Co.*

Table conveyors now manufactured by the Sage Equipment Co. are available in various widths from six in. to 36 in. They can be had using either rubber belt, solid

ALLIGATOR



CONVEYOR BELT LACING



*
Every
Tooth
A Vise*

in Long Continuous Lengths
for Conveyor Belts

- ★ Excellent for Package Conveyors, Portable Loaders, Trenching and Ditching Machines, etc.
- ★ In canneries where corrosion or rust is a problem specify Alligator made of Monel.
- ★ For magnetic separators or anti-sparking specify Alligator made of Everdur.
- ★ Separable and smooth on both sides.
- ★ 12 sizes. For belts from 1/16" to 5/8" thick—and any width.

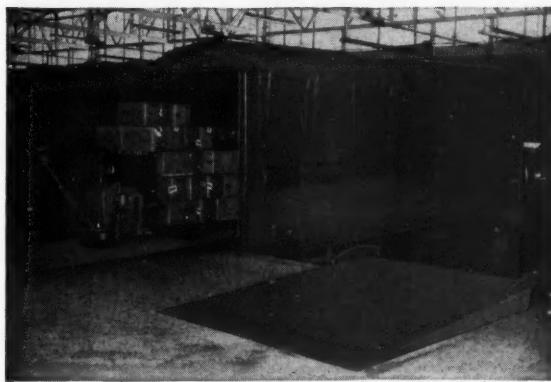
Order from Your Supply House. Ask for Bulletin A-60.

FLEXIBLE STEEL LACING CO. 4702 Lexington St., Chicago 44, Ill.

JUST A HAMMER TO APPLY IT

Circle No. 111 on Reader Service Card for more information
FLOW • JUNE, 1952

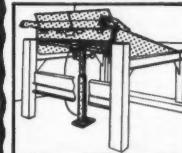
Adjusts Docks to Level of Trucks — Eliminating COSTLY Hand Loading



ROWE
ADJUST-A-DOCKS
CUT DOCK HANDLING TIME
67%

ADJUST-A-DOCKS
RAISE OR LOWER
TO MEET THE
LEVEL OF ANY
CARRIER

Costly time and labor become profit when you install Rowe Adjust-A-Doors. Shipments are moved directly into carriers by fork or lift trucks, eliminating costly hand loading. One Adjust-A-Dock triples ordinary dock capacity. Damage is cut. Hazardous loose dock plates are eliminated. Loss time accidents reduced. Rowe Adjust-A-Doors hydraulically raise or lower to truck-bed height. Easily installed, Rowe Adjust-A-Doors pay for themselves as quickly as 30 days.



WRITE TODAY
for free illustrated Bulletin
showing typical installations

ROWE METHODS, INC.
2534-C Detroit Ave., Cleveland 13, Ohio

Circle No. 112 on Reader Service Card for more information

Circle No. 113 on Reader Service Card for more information

In production or in storage

IRONBOUND EQUIPMENT HANDLES SMALL PARTS MORE EFFICIENTLY



Standard 2-way entry bolted type skid built to handle loads up to 5 tons.



Standard box top welded to standard skid. Available too, with removable boxes. Handles many items in production and storage.



Flexible arrangement of boxes and skids permits tiering and stacking to meet your individual requirements. Provides quick availability, easy handling, or storage for complete units or parts.

Each of the units illustrated has an important use in modern industry. Ironbound skid platforms and box tops are prime sources of increased plant capacity so vitally needed today. Our representative can help you to increase your output and plant space. Catalog GP-7 may help you, too!



IRONBOUND
BOX & LUMBER COMPANY
Materials Handling Division

30 HOFFMAN PLACE • HILLSIDE, N. J.

MANUFACTURERS OF QUALITY BUILT SKIDS, SEMI-LIVE SKIDS, FLOOR TRUCKS, ROLL TRUCKS, DOLLIES AND PRY BARS

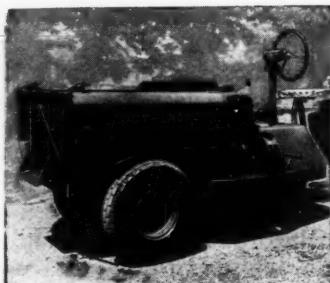
Wherever Used the SCOOT-CRETE

provides a modern and efficient method for all industrial handling jobs, both inside and outside the plant. The SCOOT-CRETE provides exceptional maneuverability with its caster steering, has large heavy-duty tires for traction to move a load over any surface. Models are available with 14-cubic-ft., 16-cubic-ft., and 20-cubic-foot capacity.

Here are two models of the SCOOT-CRETE. At the top is one unit equipped with a box body for handling bulk materials. A flat rack attachment can be interchanged with the box body for handling load units. The model shown at the bottom has a boom and scoop attachment for use in stockpiling, loading and unloading carriers, feeding hoppers, and many other applications where bulk materials are involved.

Economically priced, demanding minimum maintenance, capable of giving outstanding performance, investigate the SCOOT-CRETE in terms of your own operations.

Write today for complete details. There is no obligation.



GETMAN BROTHERS

MANUFACTURING DIVISION

South Haven, Michigan • Office Phone 937

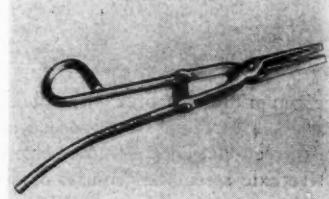
Circle No. 114 on Reader Service Card for more information

woven cotton or stitched canvas belt. Height of table is usually 32 in. or 36 in., but other heights are available. Sage Table conveyors can be equipped with side leaves on both sides or one side. Lengths to suit individual needs are available, and speeds are either constant or variable, depending on the application.

Circle No. 179 on Reader Service Card for more information

Safety Tongs—Atlas Welding Accessories Co.

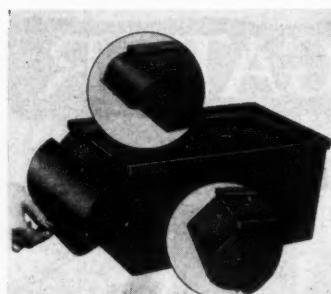
Safety tongs constructed of drop forged steel with long, broad nose members to provide a firm grip have been developed by Atlas Welding Accessories Co. Nose members are thin at the tip, making them ideal for use in removing blanks from presses, selecting and removing single sheets from a pile, handling hot parts, and for lifting parts from solutions, according to the manufacturer. By heating, the nose may be spread or reshaped as desired for handling special shapes. The tool is also available with a guard over the spring for index finger guiding.



Circle No. 180 on Reader Service Card for more information

Hooded Parts Box—Stackbin Corp.

A hooded parts box, designed to protect small parts and materials from dust and to permit handling, even on trucks or inclined conveyors, without spilling, has been announced by Stackbin Corp. The hood is securely fastened in the closed position by a positive latch which is released by finger pressure. Like other Stackbin parts boxes, these contain-

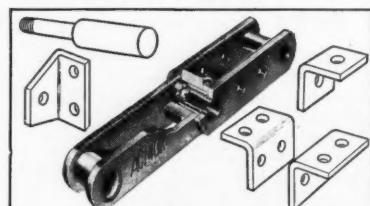


ers stack together in tiers for storage or assembly. Standard sizes range from 3 1/2" x 6" x 3 1/4" to 15" x 24" x 11".

Circle No. 181 on Reader Service Card for more information

Conveyor Chain—Acmon Conveyor Chain Co.

Acmon Type HP chain is available in either a steel roller or bushing type in two in., two 1/2 in., three in. and four in. pitch. According to Acmon Conveyor Chain Co., stock attachments are available for all pitches which are either bolted or welded to the



chain proper, making it possible to construct an unlimited variety of conveyors from chain and attachments that can be carried in stock. The chain is available on special order in various strengths and pitches up to 12 in. pitch.

Circle No. 182 on Reader Service Card for more information

able is
ilable.
ves on
needs
variable,

ation

long,
en de-

manufac-
ed as
available
ding.
tion

parts
en on
lined
out
an
lkin
od is
ed in
ition
atch
ed by
Like
parts
tain-
ard
.

on

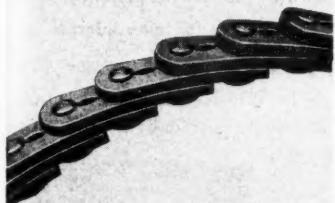
oller
four
Ac-
Ac-
y or
stock
are
all
ich
luted
the
ited
can
der

on

W

Detachable V-Link Belt—Brammer Co.

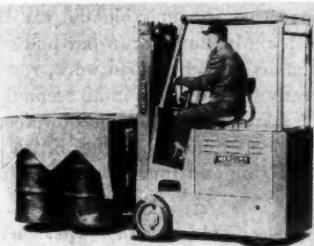
A detachable V-Link Belt that is said to be pre-stretched, will not slip, and can run in either direction has been announced by the Brammer Co. Links are made from tough woven cloth impregnated with top grade heat and oil resistant crude rubber. The non-slip feature is accredited to a high coefficient of friction and a perfected wedge action.



Circle No. 183 on Reader Service Card for more information

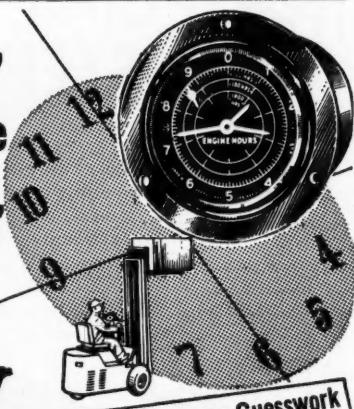
Drum-Carrying Lift Truck—Mercury Mfg. Co.

The Mercury Mfg. Co. has announced the availability of a new drum-carrying lift truck. It features a Tray-Hart drum carrier mounted on a 3000 lb. capacity Jeep truck. The four-drum attachment weighs 750 lb. and is 54 in. long by 51 in. wide. The front of the carrier may be used to push drums into pick-up



position, thus eliminating prolonged spotting of the truck.

"ON-TIME" Maintenance cuts "DOWN-TIME" REPAIRS! HOBBS Engine Hour METERS



You get longer life and longer periods of trouble-free operation when you know the length of TIME your powered equipment has been in operation. The Hobbs Engine Hour Meter TELLS you WHEN to change oil, lubricate, overhaul, etc.

NOT A REVOLUTION COUNTER
...but a true clock movement, electrically operated. Shows actual HOURS and MINUTES of engine operation...the only SURE way to proper maintenance. Accurate, precision-built, easy-to-install. Fully guaranteed. Low in price—SEE YOUR DISTRIBUTOR OR WRITE DIRECT.

ORIGINATED AND MANUFACTURED EXCLUSIVELY BY

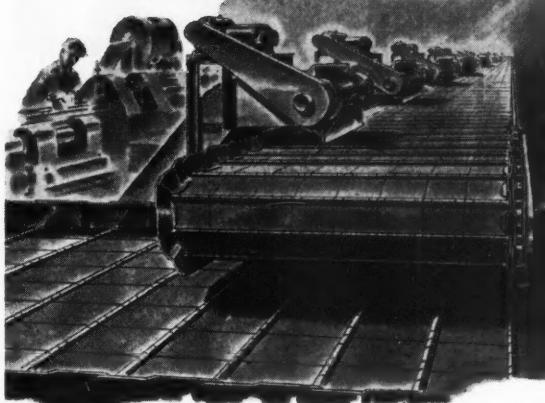
John W. Hobbs Corporation
2061 YALE BLVD. SPRINGFIELD, ILLINOIS

Circle No. 115 on Reader Service Card for more information

FLOW

• JUNE, 1952

MAY-FRAN AUTOMATIC SCRAP HANDLING SYSTEMS...



Speed-up production

Increase machine tool production . . . eliminate manual lifting and hauling . . . reduce scrap handling time . . . with a MAY-FRAN engineered system. Hot, wet or highly abrasive chips, turnings and borings are continuously removed from operating production machines by CHIP-TOTE conveyors. Scrap is then discharged onto MAY-FRAN hinged-steel belting which transports it out of plant or to other disposal point.

MAY-FRAN systems are completely automatic and provide maximum scrap handling efficiency. Speed of operation is synchronized with metal removing rate of machines. When drainage of coolants is required, steel belt can be furnished with perforated links.

For complete information on how a MAY-FRAN engineered installation can mechanize your scrap handling, write for illustrated catalog.



MAY-FRAN
ENGINEERING, INC.

1691 CLARKSTONE ROAD • CLEVELAND 12, OHIO

Circle No. 116 on Reader Service Card for more information

Circle No. 117 on Reader Service Card for more information

ELECTROLIFT

your

"ONE MAN CREW"

Here's a worm drive hoist that will speed materials handling throughout your plant. *One man* can handle up to 6 tons faster and more safely than any crew.

With savings in time, power and labor, and prevention of accidents, any ElectroLift hoist will quickly pay for itself. Wide variety of models, with optional pushbutton control.

For further features, consult your ElectroLift representative in telephone directory.

ELECTROLIFT
HOIST

ELECTROLIFT, INC., 30 CHURCH ST., NEW YORK 7, N. Y.

CUT YOUR SWEEPING COSTS
75%

Free
DEMONSTRATION
PROVES IT

with

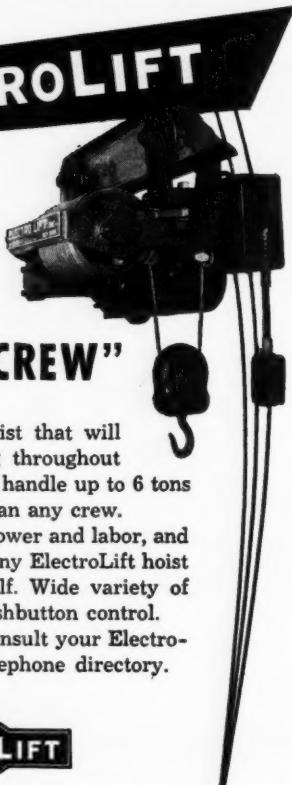
WILSHIRE POWER SWEEPERS

Costs in general may continue to go up, but here's one you can really cut...the cost of keeping your floors swept. WILSHIRE Power Sweepers not only cut your sweeping costs...they sweep cleaner, without dust. In the average plant, they pay for themselves in 10 to 12 weeks.

Write for the name of your nearest WILSHIRE Dealer who will be glad to give you a Free Demonstration right in your own plant.

WILSHIRE POWER SWEEPER CO.
516 WEST CHEVY CHASE DRIVE • GLENDALE 4, CALIFORNIA
IN CANADA—PLANT MAINTENANCE EQUIPMENT CO.—VANCOUVER, TORONTO

Circle No. 118 on Reader Service Card for more information
146



Gripping shoes in the carrier are equipped with non-slip lining and quickly conform to the contour and position of drums. Weight of drums and gravity-wedging action of gripping shoes insures positive grip. A hydraulic power unit control activates the load-releasing mechanism by applying hydraulic pressure which retracts the gripping shoes.

Circle No. 184 on Reader Service Card for more information

Freight Car Positioner—Whiting Corp.

The Trackmobile, made by Whiting Corp., weighs only 6000 lbs., but is said to be able to pull many times its own weight and may be compared in power to a conventional 20-ton plant locomotive. The unit derives its power from hydraulic jacking after coupling to a car. Mated couplers are raised sufficiently to enable the Trackmobile to borrow tractive weight from the car it pushes or pulls, it is reported. Maximum draw-bar pull of the Trackmobile is rated at 7350 lb. For road work, road wheels can be set down ready for operation in 30 seconds. Whiting states that the Trackmobile is gasoline powered, and has controls and instruments similar to a truck or tractor, save for the hydraulic action and four gear speeds in either direction.



Circle No. 185 on Reader Service Card for more information

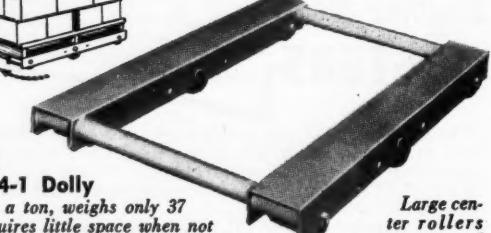
New Pallet Dollies that STEER Easy

New No. 704 OLSON Dollies turn like a two-wheel cart—give complete mobility to pallets in factories, warehouses, shipping and receiving departments, trucks, trailers, freight cars, etc. Weigh little—easily carried. Compact—require little space. Cost little—pay for themselves in a few hours use.



OLSON No. 704-1 Dolly

—carries a ton, weighs only 37 lbs. Requires little space when not in use. Costs so little every factory, warehouse, shipping, receiving and transport department should be completely equipped. Send for Bulletin.



Large center rollers carry most of the load for easy steering. Smaller rollers at ends act as stabilizers.

SAMUEL OLSON MFG. CO., INC.



2426 Bloomingdale Ave., Chicago 47, Ill.

Circle No. 119 on Reader Service Card for more information
JUNE, 1952 • FLOW

n-slip
on of
on of
power
by ap-
shoes.
ation

only
s own

ar it
all of
road
onds.
ered,
trac-
ds in

ion
es
y

turn
plete
ware-
g de-
ight
car-
pace.
in a

ce-
lers
st of
easy
ollers
sizers.

n
ow

Bin Level Control Switch—Stephens-Adamson Mfg. Co.

Two additions to their line of Tellevel Automatic Bin-Level Control Switches have been announced by Stephens-Adamson Mfg. Co.



In addition to the normal-duty device, heavy-duty and explosion-proof units are now being manufactured. Shown here is the heavy-duty type. Where materials, such as coal, stone and ore with lump sizes above $\frac{3}{4}$ in. are being discharged to bins, the heavy-duty is recommended. It is furnished with a

sturdy steel housing protecting the switch mechanism and the standard plastic float ball is replaced by a steel cone. A rubber cup at the base of the housing forms a dust and moisture proof seal to protect the switch mechanism. All three Tellevel units are designed so that a rising, or falling level of material in bins deflects a pendant float actuating a micro-switch.

Circle No. 186 on Reader Service Card for more information

Freight Car Ramp—Beacon Machinery, Inc.

Here's a dock ramp which meets specifications required

Circle No. 120 on Reader Service Card for more information

HERE'S THE ANSWER TO THOSE EVER CHANGING CONVEYOR PROBLEMS

FLEX-CO

ROLLER CONVEYORS

- ★ Portable
- ★ Flexible
- ★ Adjustable

Extend your conveyor lines where never before possible, to your truck platforms, shipping rooms, warehouses, loading ramps, etc. . . . as your everchanging conveyor problems require new conveyor setups.



TO
TRUCK PLATFORMS,
SHIPPING ROOMS,
WAREHOUSES . . .
LOADING RAMPS,
ETC. . .

FLEX-CO Roller Conveyors are demountable to 8 inch sections, so that they can easily be carried from one location to another, and added to as needed. Corners, posts, obstructions, etc. are no longer a problem in keeping your production lines operating, because you simply convey around them with FLEX-CO Portable, Adjustable, Flexible, Roller Conveyors . . . that are designed for those every day changing conveyor problems.

FOR
FULL
DETAILS

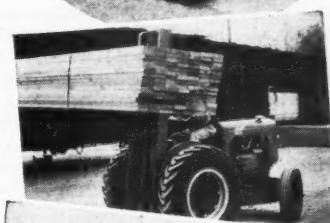
SINCE
1905

BERLIN CHAPMAN CO. BERLIN, WIS.

KING of FORK TRUCKS for OUTDOOR HANDLING



CUT MATERIAL HANDLING COSTS
THREE WAYS WITH TRACTO-LIFT!
New heavy-duty fork lift truck will
save you time, labor, and money.



TRACTO LIFT Company
2011 Baltimore, Kansas City 8, Mo.

Circle No. 121 on Reader Service Card for more information

Circle No. 122 on Reader Service Card for more information

for
FLEXIBILITY in material
HANDLING

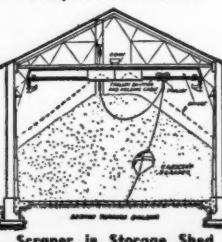
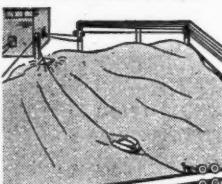
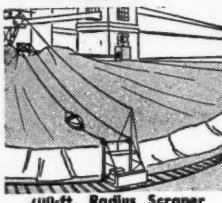
SAUERMAN POWER SCRAPERS

This versatile machine, controlled by a single operator, can stockpile raw or processed materials, crushed ores, stone, clay, chemicals, salt, sugar, fertilizer, coal, etc. indoors or out.

The unique design of the Crescent Bottomless Bucket provides fast loading to capacity, smooth transfer of materials and clean, automatic discharge, regardless of the size or shape of area being serviced. The result is a more efficient and economical operation from start to finish.

Find out more about time-saving, money-saving Sauerman Scrapers. Write today for free, illustrated catalog on bulk handling methods.

SAUERMAN BROS. Inc.
540 S. Clinton St.,
Chicago 7, Ill.



LIFT TUBING OR TURBINES

with

Cambridge GRIPPER Woven Wire Slings!

This amazingly versatile materials handling tool can be made big and tough enough to lift practically anything . . . even heavy industrial machinery.

Gripper Slings are made from a series of spiral wire loops joined together across the body of the sling to form a wide flat bearing surface. They hinge across this width, thus grip tightly around the load, even small radius bundles of piping or tubing. When rigged in a choke hitch, shown here, they wrap all around the load, thus providing greater stability. For heavier loads, a basket hitch is recommended.

Whether you're using slings as a production tool or for general maintenance, you can do the lifting job more easily and safely by using Gripper Slings.

SEE YOUR DISTRIBUTOR TODAY for full details or write direct for literature and technical data. Gripper Slings are sold through industrial supply, safety equipment and materials handling distributors.



The Cambridge Wire Cloth Co.

WIRE
CLOTH

METAL
CONVEYOR
BELTS

SPECIAL
METAL
FABRICATIONS

Department W

Cambridge 6, Md.

DISTRIBUTORS—ASK ABOUT VALUABLE TERRITORIES STILL OPEN!

Circle No. 123 on Reader Service Card for more information

148

by the railroads and the switchmen's union in that it can be retracted so there are no protrusions above the level of the dock, or beyond the edge of the dock during switching operations. For loading and unloading operations the ramp can be extended to a length of 10 ft. 10 in.; an extension of 48 in. beyond the edge. Main portion of the ramp in the retracted position is six ft., 10 in. long and required a pit six ft., 10 in. long by two ft., eight and one-half in. deep. Two widths are made, one 42 in. wide and the other five ft. wide. The standard Unit has a maximum roll-over capacity of 12,000 lb. Control is by means of electric push-button mounted at any convenient point on the dock level. Manufacturer is Beacon Machinery, Inc.

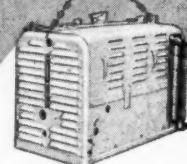
Circle No. 187 on Reader Service Card for more information

Heat Treat Furnace Loader—Michigan Crane and Conveyor Co.

Constant metered quantities, not varying more than five

PREVENTIVE MAINTENANCE eliminates truck downtime

**READY-POWER
IS BEST FOR
PREVENTIVE
MAINTENANCE**



Tie up a truck because of power failure? Never! Equip your fleet with interchangeable Ready-Power gas-electric units and, then, have one extra for the shop. Thus, power units can be rotated for preventive maintenance . . . and your trucks stay **ON THE JOB**.



Your Truck Is No Better Than Its Power!

The READY-POWER Co.



3838 Grand River Ave., Detroit 8, Michigan
Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks

Circle No. 124 on Reader Service Card for more information

JUNE, 1952 • FLOW

it can
o there
usions
vel of
beyond
the dock
ng op-
ng load-
ading
ramp
ed to a
ft. 10
portion
. long
ent and
wide
maxi-
means
point
, Inc.
ation
nd
in five

per cent, to full capacity of a furnace are provided by the Man-O-Steel heat treat furnace loader, claims the manufacturer, Michigan Crane and Conveyor Co. Re-runs are reduced, and quality of the finished product is increased as a result. The unit is custom made to fit customers' requirements and specifications. Average dimension for the 18 in. wide loader is eight in. high and eight ft. long. Discharge height is about 65 in.; feeding height varies from floor level to 18 in.



Circle No. 188 on Reader Service Card for more information

Bulk Handling System—Tote System, Inc.

Originally designed to handle flour, from mill to baker, Tote System has been put to work in handling a wide variety of bulk products including sugar, salt, cocoa, coffee, detergents, cement, whiting, polystyrene, phthalic anhy-

Circle No. 126 on Reader Service Card for more information

A Foreman for a Large Aluminum Plant* writes:
"WE HAVE 52 LUG-ALLS. WE ESTIMATE WE
SAVE TWO HOURS OUT OF EACH EIGHT
HOUR SHIFT PER MECHANIC ON RIGGING"

The LUG-ALL WINCH-HOIST
weighs less than 10 pounds,
yet lifts, lowers or pulls 1½
tons a distance of 5 feet . . .
½ ton a distance of 10 feet.

The LUG-ALL is extremely useful in
"tight" places. Pulley block permits working
around corners (as shown in upper right)
20" safety handle starts to bend before any
part approaches its pre-tested breaking point.
Made of non-rusting materials. No brakes
to slip. Flexible, pre-formed aircraft cable
made to Army-Navy specifications. Removable
handle for reverse action. Hundreds of
uses on maintenance jobs. Guaranteed for
one year. Write for Bulletin #107, or order
your LUG-ALL WINCH HOIST today.

MODEL \$35.25
3000 HD FOB FACTORY

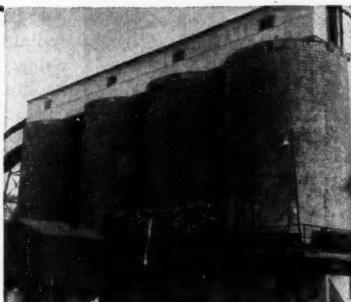
EACH MODEL 3000 HD PRE-TESTED TO 100%
OVERLOAD AT THE FACTORY

*Name on Request Distributor Inquiries Invited

LUG-ALL WINCH-HOISTS
SLINGS
LONGLIFTS

THE LUG-ALL COMPANY, WYNNEWOOD 19, PENNA.

87
varieties
•
stored in
N & F
silos



THE PAPER INDUSTRY

The photo shows four 30 x 60 ft. Neff & Fry silos used for storing wood chip at a pulp and paper plant. Each holds 30,000 cu. ft. of chips, enough to make 80 tons of pulp, which is 16% of the daily run.

Wood chips are one of the 87 kinds of flowable bulk materials handled in Neff & Fry Storage Bins. The list includes ashes, cement, clay, coal, grain, gravel, lime, nuts, ore, rock, sand, seed.

The distinctive feature of a Neff & Fry Bin is the diagonal-ended Super-Concrete Stave . . . formed under 140 tons pressure . . . virtually as dense, strong, and enduring as natural stone. The stave does not rot, rust, burn, or spill.

Get the whole story in our folder, "Bins With the Strength of Pillars." Ask for it now while you have the subject in mind.

Not exported except to Canada and Mexico

THE NEFF & FRY CO. • 110 Elm St., Camden, Ohio

SUPER-CONCRETE STAVE
STORAGE BINS

NEFF & FRY

Circle No. 125 on Reader Service Card for more information
FLOW • JUNE, 1952



There's one that's
Right for You! . . .

140-A Series. Structural
Steel Swivel Caster
equipped with Roller
Bearing Semi-Steel
Wheels—made to handle
heavy loads.

Bond
built-for-the-job
CASTERS

Light or heavy loads, rough
or smooth floors, long or short
hauls, sharp or easy turns—
these are typical service con-
ditions that Bond Casters
match with ease. And
because there are many
different types made from
standardized components,
you save money every time
you choose Bond Casters for
your jobs.

Write for your free copy
of the Bond Catalog K-38.



V-Grooved Wheel Caster
equipped with Roller Bear-
ing Semi-Steel Wheels—
designed especially for
track line assembly.



**BOND FOUNDRY
& MACHINE CO.**
Manheim, Penna.

141-A Series. Structural
Steel Rigid Caster
equipped with Roller Bear-
ing Semi-Steel Wheels—
companion stationary cast-
er to the 140-A Series.

Circle No. 127 on Reader Service Card for more information

How Much Will Accidents Like This Cost You This Year?

Box car door opening by laborious hand operations can be... and is... dangerous and deadly!

Protect your employees with the Nolan Model H One-Man Car Door Opener... guaranteed to open the most stubborn, balky box car door in 20 seconds or less!



\$2950
F.O.B.
BOWERSTON

THE NOLAN COMPANY
110-A Pennsylvania St. • Bowerston, Ohio

Fall Fatal To Worker

Man Killed in Odd Accident

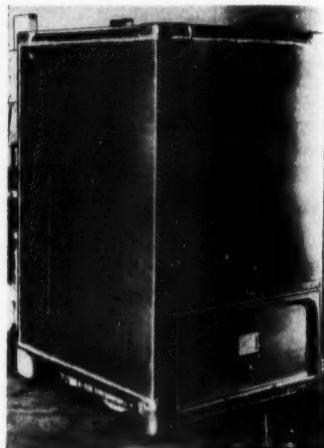
_____, Lapeer County Co-Op employee, died Monday afternoon at the Lapeer hospital, an hour after he fell from a box car.

____ and _____ were trying to open a door on the car. They got it partly open and _____ climbed into the car. Pushing to open it further, he slipped and fell, his head striking a small stone.

He did not move. Above news item appeared in The Lapeer County Press, Lapeer, Mich., February 7, 1958

Over 10,000 Nolan 1-man Car Door Openers now are saving time... saving money... saving lives, for all types of businesses. A few quick pulls on the NOLAN anchor chain does the job by one man. No gangs needed. No mangled limbs or loss of life from jammed or falling doors. The NOLAN saves its low initial cost in its first hour of operation. FREE CATALOG gives complete description. Order one or more NOLAN Model H Car Door Openers to meet all your needs.

dride and ethocel. According to the manufacturer, Tote System, Inc., the system can be adapted to use with liquids with slight modification. Heart of the system is the Tote Bin, an aluminum container available in several sizes. Standard is 3½' x 4' x 5¾'. They are adapted for handling on standard lift truck equipment. The bin has an opening at the top for filling and another on the side for emptying. Both are said to be air tight. Automatic filling and discharging equipment permits rapid handling plus blending and scaling and uniform standardization of various size batches of bulk materials.



Circle No. 189 on Reader Service Card for more information

Vibrating Conveyor—Carrier Conveyor Corp.

Natural frequency vibration is said to be the secret of success of this conveyor made by the Carrier Conveyor



Molded On
Rubber Tired
Wheels



THOMAS

MAKES 1000 DIFFERENT
KINDS OF CASTERS & WHEELS

Write for complete
catalog and price list

 <p>Pneumatic & Semi-Pneumatic Casters</p>	 <p>Swivel Casters</p>	 <p>Stem Plate Casters</p>	 <p>Cone Stem Swivel Casters</p>
 <p>Semi-Steel Wheels</p>	 <p>Extra Heavy Duty Wheels</p>	 <p>"Resonite" Wheels</p>	 <p>Solid Rubber Wheels</p>
THOMAS TRUCK & CASTER CO.			
262 MISSISSIPPI RIVER • KEOKUK, IOWA			

Circle No. 129 on Reader Service Card for more information
150

KEEP AHEAD OF DEMAND ...with MARIETTA

- Don't let shortages of vital raw bulk materials slow down production or completely idle your plant. Meet such emergencies with a Marietta storage system and increase your storage capacity from days to weeks.

Marietta tanks are constructed of high strength Air-Cell or solid concrete staves, in any size, any arrangement... give you large capacity storage facilities... enable you to buy in bigger quantities at lower cost.

Whatever flowable raw bulk material you store and handle... coal, coke, sand, gravel, chips, chemicals... whether you need storage tanks for a few tons or several hundred tons... Marietta engineers can design a safe, modern, permanent, flexibly planned storage system to meet your present and future needs. Write, wire for full details.

THE MARIETTA CONCRETE CORP.

- Marietta, Ohio
- Baltimore, Md.
- Charlotte, N. C.

Circle No. 130 on Reader Service Card for more information
JUNE, 1952 • FLOW

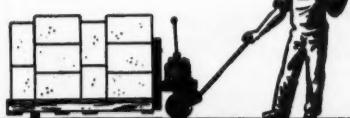
Circle No. 132 on Reader Service Card

Corp. The company claims that by having the conveyor operate at the



Courtesy of Wisconsin Corporation

DON'T BUY...
any lift trucks
until you check your needs
against Revolvator's new
Truck Index.
Send coupon today.



REVOLVATOR CO.

REVOLVATOR CO.
8639 Tonelle Ave., North Bergen, N. J.

Gentlemen:
We want to know, without obligation, all
about Revolvator Red Giant Lifttrucks.

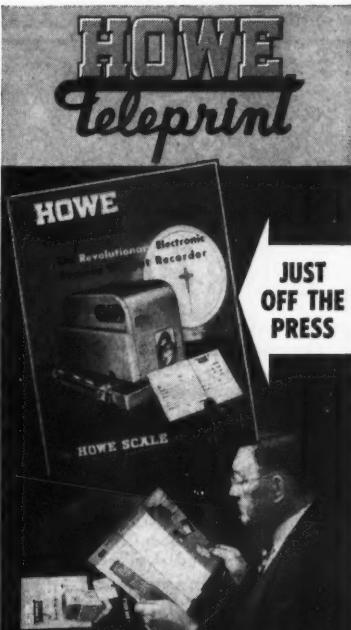
Name _____

Position _____

Company _____

Address _____

**JUST
OFF THE
PRESS**



Remote Weight Recorder



Cabinet Dial Scale

The Howe Teleprint Electronic Remote Weight Recorder is the most revolutionary development in the scale and weight printing fields! For use with Howe Tape-Drive Dials for motor truck scales and general industrial scales. Records weights on tickets, forms, tapes.

The HOWE SCALE Co.
RUTLAND, VERMONT

Dept. F6, Rutland, Vermont

Please send me:
HOWE TELEPRINT FOLDER—Form No. 681
HOWE TAPE-DRIVE DIAL SCALES—Form No. 666

Name _____

Title _____

Company _____

Address _____

City _____ State _____

exact natural frequency of its springs, the amount of power required is greatly reduced. It requires $\frac{1}{4}$ h.p. per 25 tons conveyed for each 10 ft. of level length. An example cited states that a conveyor 50 ft. long and carrying 100 tons per hr. will require $\frac{1}{4}$ h.p. \times 5 \times 4, or 5 h.p. Other advantages claimed include: high conveying speed; lower maintenance; no slow-down or dampening under load; and high capacity.

Circle No. 190 on Reader Service Card



WISCONSIN-POWERED "Truck-Man"

One man moves material fast, warehouse to freight car, with this Wisconsin-powered "Truck-Man", built by the Truck-Man Div. of The Knickerbocker Co., Jackson, Mich.

In the materials handling field, and wherever dependable engine power from 3 to 30 hp. is needed, Wisconsin Heavy-Duty Air-Cooled Engines combine the advantages that provide "Most hp. Hours" of on-the-job service, at lowest maintenance and operating costs.

- AIR-COOLING eliminates all cooling hazards and servicing chores at all seasons, in any climate.
- Timken Tapered Roller Bearings at both ends of the drop-forged crankshaft absorb all radial and end thrusts . . . prevent bearing failure.
- A rotary type high tension magneto, mounted on the OUTSIDE of the engine and equipped with impulse Coupling, assures quick starts in any weather and efficient ignition.
- Compact design and light weight adapt these engines ideally to all types of portable and stationary equipment.

These are just a few of many reasons why your best interests are served when you specify WISCONSIN AIR-COOLED ENGINE POWER. Write for detailed data.



WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

Circle No. 131 on Reader Service Card for more information
FLOW • JUNE, 1952

A 7141-3

Circle No. 133 on Reader Service Card

151

Circle No. 134 on Reader Service Card for more information



TAILOR-MADE FLOORS for all requirements:

Heavy-Duty Trucking Floors—Fire-proof Floors—Oil and Grease-proof Floors—Acid-Resistant Floors—Water-Resistant—Spark-proof and Conductive Floors.

#7 INDUSTRIAL FLOOR RESURFACER

Toughest of all mastic resurfacers, covers millions of square feet from Coast-to-Coast. Listed below are a few of the many #7 installations:

International Harvester, over 1,000,000 sq. ft.
Central Mfg. Distric, over 500,000 sq. ft.
Marshall Field & Co., over 300,000 sq. ft.
Kraft Foods Co., over 100,000 sq. ft.
Spiegels, Inc., over 100,000 sq. ft.

OTHER CAMP FLOORS

in use at:

Great Lakes, over 500,000 sq. ft.
Standard Oil Bldg. over 200,000 sq. ft.
Aldens, Inc. (over 100,000 sq. ft.)

State-Madison Bldg. over 300,000 sq. ft.
Merchandise Mart, over 75,000 sq. ft.

FLOORING MATERIALS from
for practically
EVERY PURPOSE

Dept. 10
6958 S. STATE ST.
CHICAGO 21, ILLINOIS

COAST to COAST

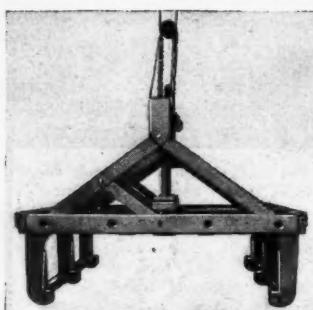
The CAMP COMPANY, INC. TRIANGLE 4-4770-1-2



Call TRIANGLE 4-4770
for one of our qualified Flooring Engineers to visit you, inspect your floors, and offer recommendations without cost or obligation.

Consult Us on Your Flooring Problems Without Obligation

MANSAYER® GRABS for DEFENSE INDUSTRIES



This Mansaver Grab moves tank turret castings easily and surely from point to point on the production line while too hot for a man to approach them. It gets the work out. One of the best ways to increase the flow of work thru your plant is to turn your pick-up and set-down problems over to the Mansaver Industries.

INCREASE PRODUCTION



This Mansaver Grab saves valuable time in chucking shells in a lathe for certain finishing operations. It is obvious that the extra time consumed in rigging rope slings and other makeshifts holds production down and boosts costs at the same time. Put a watch on any repeated lifting operation in your plant and you will prove to yourself how wise it is to

COMPLETE YOUR CRANES WITH MANSAYER GRABS

MANSAYER INDUSTRIES, INC. 3103 EAST STREET
NEW HAVEN, CONN.

Circle No. 135 on Reader Service Card for more information

CLINIC ON BULK HANDLING . . .

(Continued from page 93)

erations progress to a point below plant elevation, requiring loaded trucks to haul against an adverse grade, mine-to-plant haulage costs begin to increase.

Suggested Solutions: Haulage on a horizontal grade can be resolved by stating that the longer the haul the higher the cost per ton-mile for truck operation whereas comparable belt conveyor costs decrease as the distance increases. When an adverse grade is encountered the curve of the cost of truck transportation, plotted against distance, increases more sharply and the belt conveyor cost or distance curve drops more sharply.

At a typical operation, the lower bench is 80 ft. below plant elevation and quarry production must be hauled about 750 ft. on a 11 pct. grade. A system of track-mounted cars is used operating in balance from a hoist rope passed over a head sheave with the empty returning truck backing the returning car down grade while the loaded truck moves up the slope in front of and in tandem with the other car. Thus, the power of the returning truck is used to assist the ascending truck up the grade.

Whether or not belt conveyors can be substituted for trucks, skip hoisting, or other methods, hinges on output tonnage, life of each quarry level, and the amortization period for capital expenditures to make the change.

Belt conveyors obviously require that a sufficient tonnage of rock be handled to be economical. The fact that rock must be crushed to be loaded on the conveyors requires a crusher in the pit. Some trucks are needed to transport rock from the shovel to the pit crusher. These requirements mean that the cost of operation, maintenance, and amortization of the belt conveyor, the cost of moving the crusher to the pit, plus the cost of operating the trucks must be lower than the previous haulage method for the life of the operating level.



Do You Know About
The FLOW DIRECTORY?

See Page 154

LITERATURE AVAILABLE FROM ADVERTISERS . . .

(Continued from page 56)

The Raymond platform-type electric tiering truck transfers dies, speeds up shipping, brings materials and stores parts. Bulletin 710 from The Raymond Corporation gives all the facts on this truck.

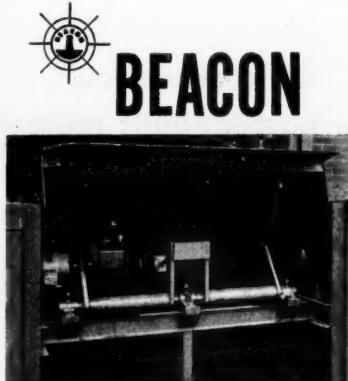
Circle No. 23 on Reader Service Card

Traffic never stops when you repair your floors with Permamix, says Permamix Corporation. You can get full details on this floor resurfacer which is easy to apply, sets instantly, can be stored indefinitely and will not freeze.

Circle No. 102 on Reader Service Card

Anthony Co. offers information on their Lift Gates, hydraulic or spring powered tail-gates which are made to suit all loading methods.

Circle No. 71 on Reader Service Card



FULL HYDRAULIC PACKAGE UNIT
DOCK RAMP

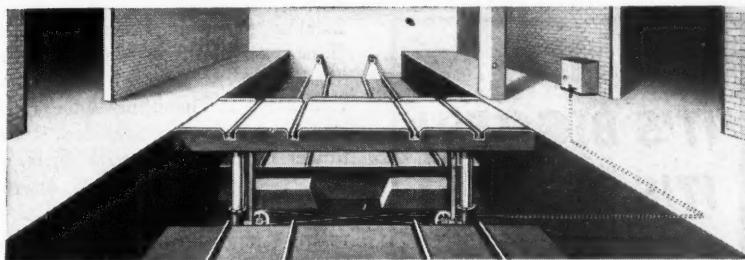
A self-contained full hydraulic dock ramp complete with individual motor pump unit. May be installed within the dock area in a prepared pit or in front of an existing dock as illustrated. Unit has 24" of vertical movement and full floating action in use. May be equipped with foot operated mechanical, or electric push button control.

Beacon manufactures a complete line of power operated dock ramps from simple air operated units to our new 4-movement hydraulic dock ramp.

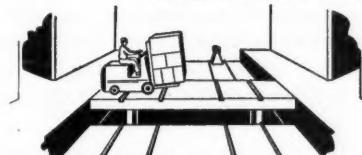
Consult our engineering department for any hydraulic or air material handling problem.

BEACON MACHINERY, INC.
P.O. BOX 188, EAST ST. LOUIS, ILLINOIS

Circle No. 136 on Reader Service Card
FLOW • JUNE, 1952



Take the short cut across spur tracks with an Oildraulic Transfer Bridge



■ This new hydraulic bridge is the most effective way to "bridge the gap" between plant areas split by railroad tracks. It permits plant traffic to flow on a straight line without congestion and time-consuming detours. Operated by dependable, eco-

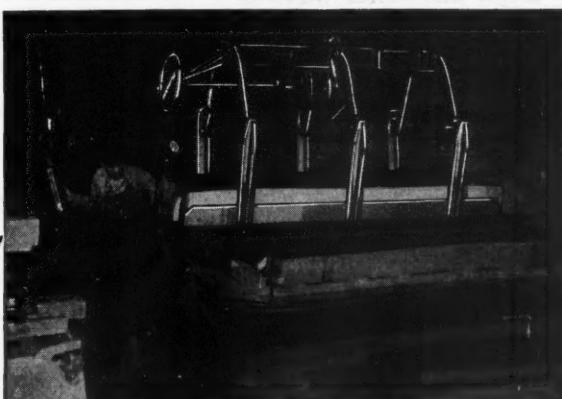
nomical Oildraulic power unit with push-button control. When platform is lowered, the rails on the Oildraulic Transfer Bridge fit into permanent trackage for rail traffic. Ruggedly designed to carry heavily-loaded power trucks, with capacities up to 100,000 lbs. as required. For complete data, write:

ROTARY LIFT COMPANY
1141 Kentucky, Memphis 2, Tenn.
World's largest builder of hydraulic lifts

Rotary®

Oildraulic Transfer Bridge

One
man
and



a C-F Lifter . . .

One man and a C-F Lifter handle the sheet steel stock in and out of storage in this plant with ease, speed and economy. C-F Lifters can pick up, carry and unload more loads per hour using less man and crane time than any other method. Note how closely a C-F Lifter piles sheets—this results in great savings in storage space. Jaw adjustments for carrying different widths of sheets are made in a few seconds by the operator—an important feature when varying sizes of stock are used. C-F Lifters are made in sizes to handle from 2 to 60 tons in standard and semi-special designs.

Write for the bulletin "C-F Lifters." It illustrates the many cost saving advantages of these lifters.



CULLEN-FRIESTEDT CO.
1320 S. Kilbourn Ave., Chicago 23, Ill.

Circle No. 138 on Reader Service Card for more information

**IT'S NEW!
IT'S BIGGER!
IT'S BETTER!**



**NEW 1952-53
FLOW DIRECTORY**

Wherever materials are handled the FLOW DIRECTORY is in the spotlight as the authoritative source of information on material handling equipment. In addition to hundreds of engineering charts and tables which it contains, it classifies and describes every kind of material handling equipment. It helps you to select the equipment you need, and tells you where to buy it. Known and used throughout the world.

Find the information you need in one of these six completely indexed sections:

- Equipment and Manufacturers
- Trade Name Index
- Manufacturers' Outlets
- Engineering and Technical Data
- Manufacturers' Catalogs
- Who Sell Equipment

FLOW DIRECTORY
1240 Ontario St.
Cleveland 13, Ohio

Please send me copy (ies) of the new 1952-53 FLOW DIRECTORY at the price of \$6.50 per copy.

Name
Title
Company
Address
City Zone State

Catalog 200 from Downs Crane & Hoist Co. illustrates and describes this company's grabs. No matter what your hoists are handling—pipe, rails, drums, plate or structural steel, stone, timber, boxes or odd-shaped objects of any description—there's a Downs Safety Grab to handle the material.

Circle No. 103 on Reader Service Card

Leading firms from coast to coast are achieving new efficiencies in car moving, spotting and switching with the Whiting Trackmobile. A new operation report from Whiting Corporation gives valuable facts for industries interested in new economy in car handling.

Circle No. 20 on Reader Service Card

Take the short cut across spur tracks with an Oildraulic Transfer Bridge, says Rotary Lift Company. Complete data is offered on this hydraulic bridge which permits plant traffic to flow on a straight line without congestion and time-consuming detours.

Circle No. 137 on Reader Service Card

Complete information from Richard-Wilcox Mfg. Co. shows how to chain

your costs down with this company's power conveyor. The unit travels up and down, in and around, anywhere in the plant.

Circle No. 70 on Reader Service Card

Bulletin DB-204 from Magline Inc. gives complete description of the Magliner magnesium dock boards. They are custom engineered for fast, easy transit between plant and freight carrier, and their lightness permits easy handling by one man.

Circle No. 10 on Reader Service Card

"Serves You Right" is a 15-minute sound movie which is offered by Clark Equipment Company on a loan basis. It covers the use of fork lift trucks and industrial towing tractors in plant maintenance work.

Circle No. 44 on Reader Service Card

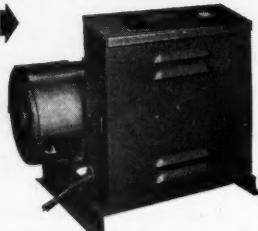
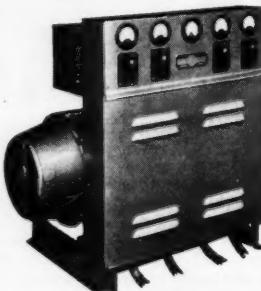
Do you know what you pay for package handling? Newer type packages may have out-moded your present package handling methods, says Alvey Conveyor Mfg. Co. Information on Alvey engineered conveyors is available from the manufacturer.

Circle No. 14 on Reader Service Card

Consult Hertner for single circuit, multiple circuit, or custom-built motor-generator battery charging equipment for driver ride trucks or motorized hand trucks

"KX" Charg-O-Matic Line

Single or multiple circuit models are available for charging driver-ride electric trucks. The single standardized circuit line is available in 13 models for charging lead acid batteries and 7 models for charging Edison batteries. For central station charging the unitized switchboard is provided in sections with a motor generator set for charging two or more batteries simultaneously.



"HX" Charg-O-Matic Line

Single or four circuit models are available for charging motorized hand truck batteries—a series for lead-acid batteries and a series for Edison batteries.

Double Duty Charge Control

An accessory for automatically charging two batteries from either an "HX" or "KX" single circuit battery charger.

Special-built Battery Chargers

Where battery charging equipment is needed to do a special job, Hertner engineers and modern plant facilities are available to produce a charger to fit any requirement.

Standard Model for immediate shipment. For complete information consult your electric truck or Hertner representative, or write direct.

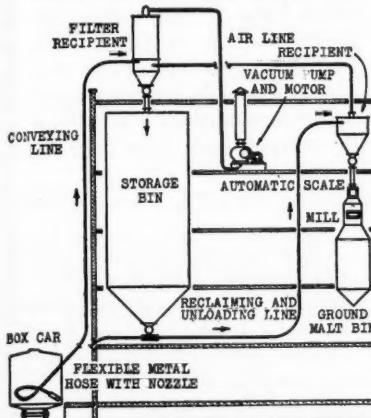
THE HERTNER ELECTRIC COMPANY
12690 Elmwood Avenue • Cleveland 11, Ohio

A General Precision Equipment Corporation Subsidiary

MOTORS • MOTOR-GENERATORS • GENERATOR SETS • REPRESENTATIVES IN PRINCIPAL CITIES
Circle No. 139 on Reader Service Card for more information

JUNE, 1952 • FLOW

Circle No. 140 on Reader Service Card



Above diagram shows a pneumatic conveying system for unloading malt into bulk from Railroad box cars in Storage Bin, or direct to Ground Malt Bin through Automatic Scale and Mill. Malt is also reclaimed from the Storage Bin to the Ground Malt Bin. Only one man is required to operate this system.

This arrangement also applicable in connection with most loose bulk materials.

HOLLY
PNEUMATIC SYSTEMS, INC.
NEW YORK 16, N. Y.

Acme Steel Company wants to show you how Acme Steel stitching insures safe arrival. Shippers everywhere are using Acme Steel wire stitchers to help reduce the annual loss of goods lost or damaged in transit.

Circle No. 19 on Reader Service Card

The Budgit I-Beam trolley is described by Manning, Maxwell & Moore, Inc., in Bulletin 390. Features include tough steel construction, ball bearings in wheels, and adjustable to fit several I-Beam sizes.

Circle No. 148 on Reader Service Card

When you ship nails, ship safely in International's Keg-It, the square fibreboard package for nails. Complete information is available from International Paper Company, Container Division.

Circle No. 81 on Reader Service Card

Detailed, illustrated literature from Tote System, Inc., describes the Tote System as the biggest boon to bulk material handlers since the birth of the barrel. The system is built around 74-cubic-foot aluminum bins together with filling and discharging equipment.

Circle No. 78 on Reader Service Card

**MATERIALS
Handling
IDEAS**

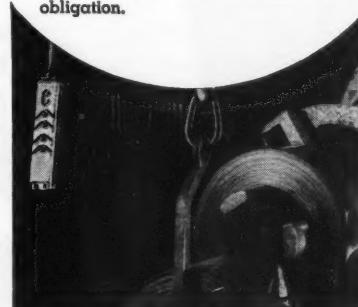
ALL MOTIONS MOTORIZED

To Reduce Costs



• Keeping this guide machine fed with steel strip was always a "touch and go" proposition requiring the attention of several men. To reduce handling costs and speed output, a new idea was tried: a one-ton, single I-Beam Reading Electric Crane, with all motions motorized, was custom-built for the job. Now the entire operation is under the thumb of one man—all he does is push the right button on the control pendant.

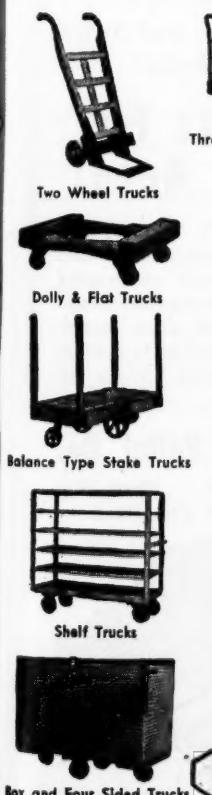
Modern materials handling is working wonders in reducing production costs these days. Chances are, a Reading Engineer can suggest ways to do the same in your plant if you give him the opportunity to personally analyze your operations. Simply drop us a line—there's no obligation.



READING CRANE & HOIST CORPORATION
2108 ADAMS ST., READING, PA.

CHAIN HOISTS • ELECTRIC HOISTS
OVERHEAD TRAVELING CRANES

**READING
CRANES**



Nutting

Means Better Trucks
For Better Handling

1000 standard and special trucks are designed for efficient materials handling in all plants. Used in a Nutting planned layout you can count on a smooth flow of plant traffic.

CALL IN A NUTTING SALES ENGINEER

Let him, backed by Nutting, help you select the right truck for each job. Consult the classified section of your phone book or write for Bulletin 49-G.



NUTTING TRUCK AND CASTER COMPANY

1606 Division St., Faribault, Minnesota

Since
1891

Circle No. 141 on Reader Service Card for more information
FLOW • JUNE, 1952

Circle No. 142 on Reader Service Card

PERFORMANCE
"first" and "foremost"

Euclid Cranes and Hoists have always been built "up to a standard"—never "down to a price."

They appeal to the seeker for quality and he is never disappointed.

A list of purchasers reads like a "who's who" of industry. The record of repeat orders is significant and impressive.

We'll be glad to discuss your problems in the light of our long experience and can doubtless offer some constructive suggestions as to methods and equipment.

Write for Catalogs.

THE EUCLID CRANE & HOIST COMPANY
CHARDON ROAD, EUCLID, OHIO

EUCLID
CRANES
AND HOISTS
Raise Profits

Market Forge Company offers information on the versatile Marforge Load-Mobile fork truck, which weighs only 2600 pounds, yet has a capacity of 2000 pounds. Has full free lift, and tractor-type wheels reduce friction in lifting.

Circle No. 144 on Reader Service Card

The Howe Teleprint electronic remote weight recorder records weights on tickets, forms or tapes, and can be used with motor truck scales and general industrial scales. Information is available from The Howe Scale Co.

Circle No. 133 on Reader Service Card

Wilshire Power Sweeper Co. would like to prove how to cut your sweeping costs 75%. The company maintains their sweepers not only cut sweeping costs, they sweep cleaner, without dust.

Circle No. 118 on Reader Service Card

P-M is a new bulk-handling method, says The Prime-Mover Co., and you can get specification data and other information on this company's powered-wheelbarrow.

Circle No. 73 on Reader Service Card

THE NEW VERSATILE
marforge **LOAD-MOBILE**
FORK TRUCK

LIGHTEST IN WEIGHT FOR
2,000 LBS. CAPACITY

Weighs only 2,600 lbs. with battery

MAXIMUM VISIBILITY

FULL FREE LIFT

TRACTOR TYPE WHEELS REDUCE FRICTION IN LIFTING

TRACTOR . . . FREIGHT TRUCK . . .
LIFT TRUCK . . . PALLET LIFT TRUCK . . .
TIER LIFT TRUCK ALSO AVAILABLE
WITH SAME INTERCHANGEABLE
POWER UNIT. It will pay you to
ask for complete information.

Offices in Principal Cities

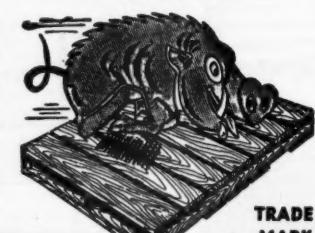
Market Forge Company
MATERIALS HANDLING DIVISION
35 Gorvey St., Everett 49, Mass.

55 years in the Materials Handling business.

Circle No. 144 on Reader Service Card for more information

Ba
str
ser
tur
an
ter
ab
pa
Cin
Ill
ar
pa
Le
ma
Cin
Ve
ev
Bo
m
fe
ce
fo
is
Cin
Ca
L
In
pa
in
Cin
In
w
fr
ho
pa
fi
fr
Cin
B
G
“
ad
p
ti
p
Cin
E
T

Circle No. 145 on Reader Service Card
JUNE, 1952 • FLOW



TRADE
MARK

s information
lar forge
n weighs
capacity
lift, and
ction in

ce Card
remote
ights on
be used
general
is avail-
p.

ce Card
would
weeping
ntains
weeping
ut dust.

ce Card
method,
nd you
l other
power-

ce Card
wn
!
are
and
ected
ood
ards
ent
for

0.
474

ADE
ARK
Card
LOW

Whatever the door control requirements in your plant, there is a type of Stanley Magic Door Control to meet that objective. Complete information is available from The Stanley Works, Magic Door Division.

Circle No. 34 on Reader Service Card

Baker trucks are engineered and constructed to give maximum trouble-free service, and designed with many features for easier preventive maintenance. Bulletin 2100, "Care and Maintenance of Industrial Trucks," is available from The Baker-Raulang Company.

Circle No. 6 on Reader Service Card

Illustrated brochure and specifications are available from Tracto-Lift Company on its heavy-duty fork lift truck. Let Tracto-Lift show you how to cut material handling costs three ways.

Circle No. 121 on Reader Service Card

Veeder-Root Incorporated says that everyone can count on its Reel Control Box, which, with its built-in counting mechanism, indicates the number of feet of antenna reeled in and out of certain types of military aircraft. Information on any counting problem is available.

Circle No. 7 on Reader Service Card

Catalog GP-7 from Ironbound Box & Lumber Company will show you how Ironbound equipment handles small parts more efficiently in production or in storage.

Circle No. 113 on Reader Service Card

In the material handling field, and wherever dependable engine power from 3 to 30 hp is needed, Wisconsin heavy-duty air-cooled engines provide power to fit the machine and power to fit the job. Detailed data is available from Wisconsin Motor Corporation.

Circle No. 131 on Reader Service Card

Built with high compression strength, Gaylord boxes eliminate "weaving" or "toppling" in storage and in transit, according to Gaylord Container Corporation. You can get full information on your particular packaging problems.

Circle No. 84 on Reader Service Card

Edison Storage Battery Division of Thomas A. Edison, Incorporated, of

fers their bulletin "Modern Material Handling" for information on the advantages of the unit-load method of handling material, the power requirements of industrial trucks and the characteristics of Edison nickel-iron-alkaline storage batteries.

Circle No. 36 on Reader Service Card

Catalog from Colson Equipment & Supply Co. describes the Cesco Dumper, which handles up to 100 loads per hour, has a lifting capacity ranging from 100 to 1500 pounds. It lifts and dumps bags, barrels, drums and boxes.

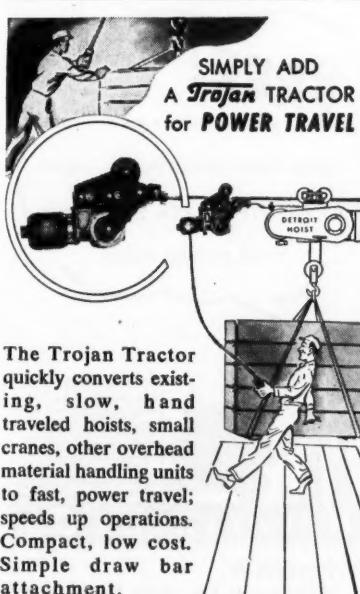
Circle No. 110 on Reader Service Card

Get Brainard Steel Division's catalog on the Brainard Strapping System. Complete steel strapping service includes demonstrations on the proper method of strapping loads.

Circle No. 83 on Reader Service Card

Find out how Yale gas trucks' features reduce your bills for breakdown and wear in transmission, drive, steering assembly and other working parts. Detailed literature is available from The Yale & Towne Mfg. Co.

Circle No. 37 on Reader Service Card



The Trojan Tractor quickly converts existing, slow, hand traveled hoists, small cranes, other overhead material handling units to fast, power travel; speeds up operations. Compact, low cost. Simple draw bar attachment.

Mail this ad or the coupon for more information and Bulletin 810.

DETROIT HOIST & MACHINE CO.
8211 Morrow St., Detroit 11, Mich.

Company _____

Address _____

Circle No. 146 on Reader Service Card

THESE SILENT HOIST WORK HORSES ARE MADE TO SAVE UP TO 75% IN MATERIAL HANDLING COSTS AND TIME AS WELL



HEAVY-DUTY FORK
LIFTRUK
5-7 1/2-10 TON CAPACITIES

The heavy-duty "Silent Hoist" LIFTRUK and LIFT-O-KRANE feature fast handling of unbalanced and capacity loads, with maximum stability . . . high lifting range . . . short turns in narrow aisles create added acres to your storage space.

These SILENT HOIST features add up to faster inloading, most efficient inter-plant handling and scientific stacking, quicker out-loading to truck, trailer or car, with time and cost savings, very often up to 75%.



SILENT HOIST & CRANE CO.
Pioneers of Heavy Duty
Materials Handling Equipment

888 63rd STREET BROOKLYN 20, N. Y.

Circle No. 147 on Reader Service Card



**LESS LIFTING TIME . . .
MORE FOR PRODUCTION**

Want greater output and lower costs? You get both with the 'Budgit' Electric Hoist! This powerful hoist speeds lifting — gives workers extra time to produce more. Women and older men — now helping turn out defense and civilian goods — praise its easy, safe, one-hand operation. And, the 'Budgit' works all day for pennies.

The portable 'Budgit' is a hang-up, plug-in hoist — ready for service as soon as unpacked. No extras to buy. No installation costs. Capacities: 250 to 4,000 lbs. A.C. and D.C. models. Priced from \$119. Get all the facts. Send for Bulletin 391.



A 'BUDGIT' I-BEAM TROLLEY makes any hoist more useful. Tough steel construction. Ball-bearings in wheels. Adjustable to fit several I-beam sizes. Capacities: 500 to 4,000 lbs. Prices from \$13.50. Write for Bulletin 390.



'Budgit'
ELECTRIC HOISTS

MANNING, MAXWELL & MOORE, INC.
MUSKEGON, MICHIGAN

Builders of "Shaw-Box" Cranes, "Budgit" and "Load Lifter" Hoists and other lifting specialties. Makers of "Ashcroft" Gauges, "Hancock" Valves, "Consolidated" Safety and Relief Valves, and "American" Industrial Instruments.

Circle No. 148 on Reader Service Card
158

OPPORTUNITIES

USED EQUIPMENT MEN JOBS LINES

Rates: for "Positions Wanted" \$8.00 minimum, limit 25 words. For all other classifications \$10.00 minimum for 25 words; each additional word 25c. Boldface type or all capitals, \$12.00 minimum for 25 words, each additional word 35c. Box address counts as five words. All insertions payable in advance.

FOR SALE

1 — GOOD USED PORTABLE LEWIS-SHEPARD TYPE CBT Telescopic Space Master Stacker or Elevator, 750 lbs. capacity, 9' 4" lifting height from floor, 30" x 36" platform, 1 H.P. 220 volt motor, A-1 conditions, \$900.00. Phone collect Saxony Mills, St. Louis, Mo., GARfield 1322.

2—Battery Chargers. 3 phase, 60 cycle 220 volt input 50 volt D C 90 Ampere output metallic oxide rectifiers, with timers and ammeters — \$250.00 each. Box 6152 FLOW.

MERCURY HIGH LIFT TRUCK, Model A-1001, 6000# capacity, complete with Ready-Power unit. Lowered height 11", lift 62", A-1 condition. Make an offer. Clark-Hopkins Equipment Corp., 1124 Spring Garden St., Phila. 23, Pa.

FOR SALE—10 used Easy Load Transfer Plates 54" x 70" — 15,000# capacity. Manufactured by Christensen, 1950. Each plate equipped with channel frames for ease of operation. \$100 each.

S. S. Kreage Warehouse
Box 359
Fort Wayne 1, Indiana

HELP WANTED

SALES-ENGINEER

Technical graduate. For promising position with established manufacturer of Industrial Cranes and Lift Trucks. Write qualifications and salary expected, in full confidence.

Box No. 6252 FLOW

Graduate mechanical engineer, 10-15 years' experience in handling improvement and mechanization, preferably with knowledge of many different industries and some consulting experience. Opportunity to become partner. Preben Jessen Co., Factory Engineers, Chrysler Building, New York City.

CONVEYOR ENGINEER WANTED. By Midwest Mfr. Making nationally advertised line. Must understand design and plant management. Plant owned by one man interested in individual for future partner. Want man to work for a time then arrange partnership agreement. Write Box 6352 FLOW stating age, experience, and reference. Capital not necessary, ability is wanted. All replies confidential.



REVOLATOR CO.

8839 Tonelle Ave., North Bergen, N. J.

Gentlemen:

We want to know, without obligation, all about Revolator Go-Getter Pallet Type Lifttrucks.

Name.....

Position.....

Company.....

Address.....

Circle No. 149 on Reader Service Card

Advertisers' Index

A

Acme Steel Co.	21
Aerol Co., Inc.	136
All Steel Welded Truck Corp.	100
Allis-Chalmers Mfg. Co.	8
Alvey Conveyor Mfg. Co.	14
American Box Co.	126
American Chain & Cable Co., Chain Sling Div.	34
American Chain & Cable Co., Wright Hoist Div.	35
American Engineering Co.	15
American Monorail Co.	56
Angier Corp.	130
Anthony Co.	103
Arkansas Pallet Co.	156
Automatic Transportation Co.	1

B

Baker-Raulang Co.	6
Baldwin-Lima-Hamilton Corp.	23, 53
Barrett-Cravens Co.	13
Bassick Co.	24
Baughman Mfg. Co.	28
Beacon Machinery Co.	153
Belt Corp.	137
Berlin Chapman Co.	147
Big Joe Mfg. Co.	140
Bond Foundry & Machine Co.	149
Borroughs Mfg. Div., American Sales Engineer	26
Bostitch	87
Brainard Steel Co.	123
Buda Co.	46
E. W. Buschman Co.	48

C

C & D Batteries, Inc.	58
Cambridge Wire Cloth Co.	148
Camp Co.	152
Central Fibre Products Co.	132
Cesco Container Co.	106
Chain Sling Div., American Chain & Cable Co.	34
Wm. Christensen Co., Inc.	104
Clark Equipment Co.	49
Colson Equipment & Supply Co.	142
Convey-All Corp.	109
Cullen-Friestad Co.	153

D

Derby Sealers, Inc.	110
Detroit Hoist & Machine Co.	157
Dico Co.	92
Dodge Mfg. Co.	29
Chas. Wm. Doepke Mfg. Co.	30
Downs Crane & Hoist Co.	139

E

Thos. A. Edison, Inc.	40
ElectroLift, Inc.	146
Elwell-Parker Electric Co.	5
Equipment Mfg., Inc.	142
Euclid Crane & Hoist Co.	156

F

Fairbanks Co.	91
A. B. Farquhar Co.	90
Flexible Steel Lacing Co.	143
Food Machinery & Chemical Corp.	138

Wm. A. Force & Co.	134
Fried Steel Equipment Mfg. Corp.	139

G

Gaylord Container Corp.	125
General Box Co.	121
General Electric Co.	42 & 43
General Tire & Rubber Co.	12
Gelman Bros.	144
Globe Hoist Co.	95
B. F. Goodrich Co.	31
Goodyear Tire & Rubber Co.	9
Gould National Batteries, Inc.	37
Grover Mfg. Co.	32

H

Hercules Steel Products	101
Hertner Electric Co.	154
John W. Hobbs Corp.	145
Holly Pneumatic Systems	155
Frank G. Hough Co.	19
Howe Scale Co.	151
Hydroway Scales, Inc.	141

I

Industrial Marking Equipment Co.	132
International Paper Co., Container Div.	119
International Staple & Machine Co.	129
Ironbound Box & Lbr. Co.	144
Island Equipment Corp.	136

K

Kimberly-Clark Corp.	131
---------------------------	-----

L

L & C Machinery Corp.	54
Lamson Corp.	93
Lanham Co.	140
Lewis-Shepard Products, Inc.	140
Inside Back Cover	
Lippmann Engineering Works	108
Lug-All Co.	149

M

Magline, Inc.	10
Manning, Maxwell & Moore, Inc.	158
Mansaver Industries, Inc.	152
Marietta Concrete Corp.	150
Market Forge Co.	156
Marsh Stencil Machine Co.	134
Marvel Industries, Inc.	137
Materials Transportation Co.	99
May-Fran Engineering Co.	145
Mechanical Handling Systems, Inc.	52
Mercury Mfg. Co.	50
Michigan Crane & Conveyor Co.	20
Minnesota Mining & Mfg. Co.	127
Mobilift Corp.	11
Monarch Rubber Co.	17
Moto-Truc Co.	44

N

Neff & Fry Co.	149
Nolan Co.	150
Nutting Truck & Caster Co.	155

O

Samuel Olson Mfg. Co.	146
Osgood Co.	33

P

Paisley Products, Inc.	133
Palmer-Shile Co.	160
Permamax Corp.	138
Phillips Mine & Supply Co.	84
Pittsburgh Steel Products Co.	2
Powell Pressed Steel Co.	51
Prime-Mover Co.	105

R

Rapids-Standard Co.	55
Raymond Corp. (formerly Lyon- Raymond Corp.)	25
Reading Crane & Hoist Corp.	155
Ready-Power Co.	148
Revolator Co.	151, 158
Reynolds Metals Co.	115
Richards-Wilcox Mfg. Co.	102
Rotary Lift Co.	153
Rowe Methods, Inc.	143
Ruger Equipment Co.	107

S

St. Anthony Machine Products Co.	141
Sauerman Bros. Inc.	148
Service Caster & Truck Corp.	135
Signode Steel Strapping Co.	128
Silent Hoist & Crane Co.	157
Standard Conveyor Co.	96
Stanley Works, The	36

T

Thermod Co.	4
Thew Shovel Co.	45
Thomas Truck & Caster Co.	150
Tote System, Inc.	109
Towmotor Corp.	83
Tracto-Lift Corp.	147
Truck-Man Div., Knickerbocker Co.	88

U

Union Special Machine Co.	132
United States Rubber Co.	132

V

Veeder-Root, Inc.	7
------------------------	---

W

John Waldron Corp.	85
Jervis B. Webb Co.	86
Westinghouse Electric Corp.	132
Whiting Corp.	22
Wilshire Power Sweeper Co.	146
Wisconsin Motor Corp.	151
Wright Hoist Div., American Chain & Cable Co.	35

Y

Yale & Towne Mfg. Co.	41, 57
Youngstown Steel Door Co.	27

PS STACKING RACK

with Safety Interlocking Feature



Automatic Tong
by Heppenstall,
Pittsburgh, Pa., for
easy pick-up and safe
carrying.

Designed for space—and labor-saving stacking, safe tiering, of coils or similar materials, where head room is important factor.

Interlocking
ends prevent
shifting, keep
racks securely
in place, sav-
ing overhead
space.

Easy to move
by lift truck or
overhead
crane, by one-
man opera-
tion. All-steel
welded, cor-
rugated bot-
tom, I-beam
ends. Built to
your specifica-
tions, includ-
ing color of
paint desired.



Racks are designed
for convenient han-
dling by lift truck or
crane.

When ordering—
Always give "Item"
number; this will help
prevent error.

Rack being tiered by single opera-
tor. Note how ends lock in place.

DESIGNED AND MANUFACTURED BY

Palmer-Shile Co.

16012 Fullerton Avenue, DETROIT 27, MICHIGAN

OTHER Palmer-Shile PRODUCTS



Item
B-218
WELDER'S TRUCK



Item
B-539
ALL METAL
PALLET



Item
NS-249
WOOD BOX
metal bound



Item
C-608
AUTOMATIC
END DUMP



Item
S-911
MULTI-PURPOSE
CART



Item
S-470
BARREL TRUCK



Item
B-380
TRAILER TRUCK
side dump



Item
B-476
STOCK CHECKER'S
TRUCK



Item
NS-415
UTILITIES RACK
on wheels



Item
NS-344
SHEET STEEL
GRAB



Item
B-468
CARBOY TRUCK



Item
S-703
INDUSTRIAL
DUST PAN



Item
B-28
C-451
Sloped Bottom
BOX and STAND



Item
C-396
All-Steel
STOCK RACK



Item
B-731
DRUM and
BARREL TILT



Item
B-734
HAND DUMP
TRUCK



Item
B-746
CORRUGATED BOX
with legs

★ Write for New Catalog ★

easiest Operated
FORK TRUCK
there is!"

This **NEW**
LEWIS-SHEPARD SPACEMASTER®
Electric Fork Truck has
a Magnetic Personality ...

MAGNETIC CONTROLS PRACTICALLY RUN THE TRUCK FOR ME. I GET SPEED, DIRECTION AND BRAKING ALL WITH ONE LEVER. INCHING OPERATIONS EVEN WITH FRAGILE LOADS ARE A CINCH.

I SIMPLY THROW THE CONTROL HANDLE TO FULL SPEED FORWARD OR REVERSE AND GET A SMOOTH, TIMED ACCELERATION. THE MAGNETIC CONTROL WITH FOUR SPEEDS FORWARD AND REVERSE GIVES ME AND MY LOAD A MUCH SMOOTHER, SAFER RIDE.



PLUS 84 OTHER ENGINEERING ADVANCEMENTS



Since 1915

LEWIS-SHEPARD PRODUCTS, INC.

LEWIS-SHEPARD Products, Inc.
14 Walnut St., Watertown 72, Mass.

Please send me the SPACEMASTER catalog
 Please have an L-S representative call

Name _____

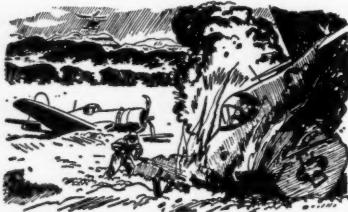
Company _____

Street _____

City _____ State _____



IT WAS A BRIGHT EARLY DECEMBER DAY and Lieutenant Hudner was flying a Korean combat mission alongside another plane piloted by Ensign Jesse Brown. A burst of flak



caught the ensign's plane and he went spinning down, aflame. Lieutenant Hudner then deliberately crash landed near his flame-trapped shipmate. He radioed for help, after

which he fought to keep the fire away from the fatally injured ensign until a rescue helicopter arrived. Today Lieutenant Hudner says:

"Maybe if America had been strong enough to discourage aggression two years ago, my friend, Jesse Brown, might be alive right now. So might thousands more of our Korea dead.

"For it's only too sadly true—today, in our world, weakness invites attack. And *peace is only for the strong*.

"Our present armed forces *are* strong—and growing stronger. But

don't turn back the clock! Do your part toward *keeping* America's guard up by buying more . . . and more . . . and more United States Defense Bonds *now!* Back us up. And *together* we'll build the strong peace that all Americans desire!"

★ ★ ★

Remember that when you're buying bonds for defense, you're also building a personal reserve of savings. Remember, too, that if you don't save *regularly*, you generally don't save at all. So sign up today in the Payroll Savings Plan or the Bond-A-Month Plan. Buy United States Defense Bonds now!

**Peace is for the strong...
Buy U.S. Defense Bonds now!**

Lt.(jg) Thomas Hudner, Jr. U.S.N.

Medal of Honor



The U. S. Government does not pay for this advertisement. It is donated by this publication in cooperation with the Advertising Council and the Magazine Publishers of America.

FLOW Magazine